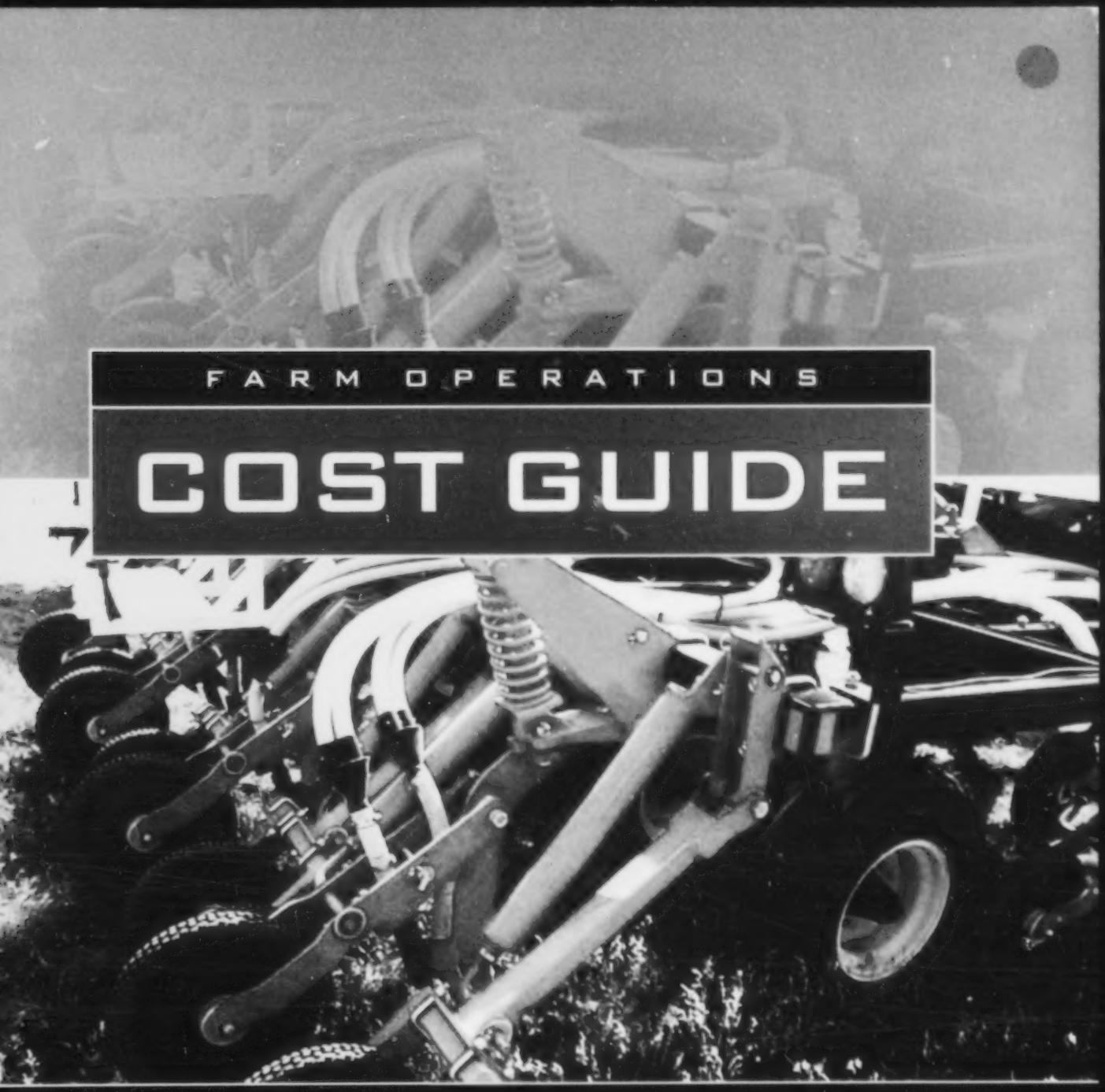

FARM OPERATIONS

COST GUIDE

2004

•CUSTOM RATES SURVEY SUMMARY •FARM MACHINERY COST GUIDE

•CALCULATING FARM MACHINERY COSTS

FARM OPERATIONS
COST GUIDE

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Alberta
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Business Management Innovations Branch

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Introduction

Since 1975, the Business Management Innovations Branch of Alberta Agriculture, Food and Rural Development has annually surveyed custom rates, rental rates and the new cost of farm machinery to provide information to farmers and custom operators.

The first part of this publication presents a summary of custom work and rental rates during 2003. These rates are only intended as a guide. **They are not to be interpreted as the rates you must charge or pay.** The surveys were conducted by Maureen Wenger of the Statistics and Data Development Unit from February 2003 through December 2003 and summarized by David Thacker, who is associated with the Business Management Innovations Branch.

The department gratefully acknowledges the contribution of the farmers and custom operators who willingly co-operated by providing information about their custom and rental rates.

Again for 2004, a listing of prices for some common farm inputs is included in part two. These prices are collected throughout the year by Wild Rose Ag Producers (formerly Unifarm) and the Statistics and Data Development Unit of Alberta Agriculture, Food and Rural Development.

Part three of this publication is a farm machinery cost guide, which provides information on the cost of owning and operating farm machinery. Technical information such as current machinery prices, repair rates, performance, capacity, fuel consumption and fuel price are used to calculate fixed and variable costs. The cost calculations are intended to be used as approximate costs based on new machinery prices as of December 2003.

Several years ago, the "Years of Life and Salvage Value" were changed to more accurately indicate what was happening in the marketplace. We feel this adjustment makes our calculation more accurate, but we are still using average numbers, so we recommend that you use your specific information and the worksheets or the online Machinery Cost Calculator wherever possible. This work was done by Brad Smith of the Business Management Innovations Branch in Olds.

If you require further assistance in using this material, contact an Alberta Agriculture, Food and Rural Development Risk Management Specialist. Locations and telephone numbers for Risk Management Specialists are listed on page 30.

Other information sources

Farm Machinery Custom and Rental Rate Guide, 1998
Saskatchewan Agriculture and Food

Farm Machinery Rental and Custom Rate Guide, 1998
Manitoba Agriculture Farm Management

The online Machinery Cost Calculator at:
http://www1.agric.gov.ab.ca/app24/costcalculators/machinery/getmachimpls.jsp

Nebraska Tractor Test Laboratory
http://tractortestlab.unl.edu/testreports.htm

IRON solutions
http://www.ironsolutions.com/

Custom Rates Survey Summary

Objective

The specific objective of this survey summary is to organize and report 2003 custom rates for certain custom operations on the farm. No effort is made to evaluate the fairness of reported rates. **The goal is to report what is being charged, not what should be charged.** Because many of the surveys were conducted in 2003, higher costs or other market factors may have resulted in higher custom rates by the time of publication.

Sample size

Sample size is often small, and thus, reported rates should only be used as a general indication of rates being charged for various custom operations in Alberta. **Custom rates in this publication are not to be interpreted as recommended rates.** Rates charged by individual custom operations should still be evaluated on their own merit.

Users of custom rates information

Farmers may find custom rates useful as a guide for machinery management, budgeting and financial planning for credit needs. Also, custom rates can be used as a guide in negotiating settlements for work performed for neighbors or others. Lenders, educators, government institutions and others doing budgeting or planning analysis may also find custom rates helpful in their work. Custom operators can use these guides to compare their own rate with the market rate in a certain area.

Understanding the tables

Custom rates for various operations in Alberta are presented on pages 4 to 13. The tables are itemized under type of:

- operation surveyed
- location where rates apply
- most common rates charged in 2002
- range of rates charged in 2003
- most common rates charged in 2003

Under the heading **Location**, three regions (south, central and north) are identified. When survey reports were insufficient for regional comparisons, the location is identified as Alberta. The map on page 3 outlines the regional boundaries.

Custom rates in 2003 for the various operations are shown as Range 2003 and Most Common 2003. The rates quoted most often by custom operators are under the heading Most Common 2003. Variations in rates from lowest to highest are under the heading Range 2003. Many factors contribute to these ranges, some of which are listed below.

Factors contributing to lower rates:

- neighborly work exchange
- location of job in relation to home base of custom operator
- custom operator's desire to cover variable costs, but not necessarily all fixed costs
- use of older equipment that does not reflect current investment cost and/or has a lower capacity
- services such as labor, meals, fuel, supervision, transportation or other convenience services being provided to the custom operator by the farmer
- the size of the job

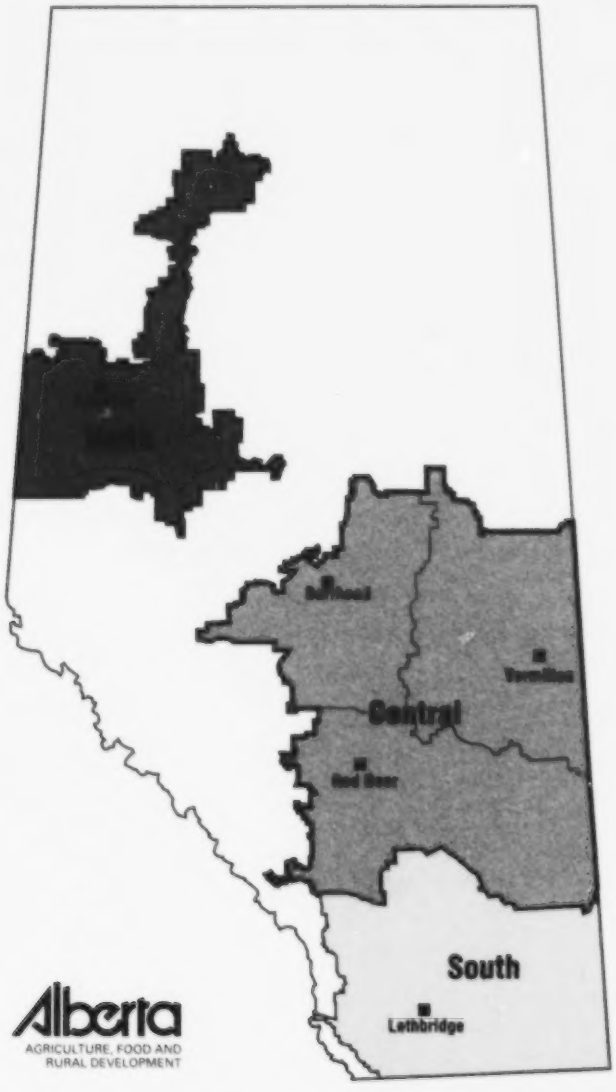
Factors contributing to higher rates:

- full-time custom operators who are covering all costs
- charging what the market will bear
- tough jobs requiring extra power, repairs, fuel or time
- field conditions such as rocks, rough terrain, obstructions or high yield crops
- small size jobs
- higher capacity machines

How to use custom rates information

Rates quoted in this publication for the various custom operations are expressed in numerous ways (per hour, ton, tonne, bale, acres, etc.). Before comparing the various custom operations, always choose the appropriate basis on which to compare. For example, grain harvesting may require a per acre cost as compared to corral cleaning where a per hour rate is more appropriate. When custom rates are given in dollars per hour, it is advisable to convert to a physical unit cost (bushels, tonnes, acres) appropriate to that operation. A low cost per hour can be a very high cost per acre, tonne, etc.

Because custom rates quoted in this publication may not suit all custom operators and those hiring custom work, you should calculate your own custom costs. For more information on how to calculate your own cost, consult the sections on input prices and machinery costs in this book, or use the online **Machinery Cost Calculator at http://www1.agric.gov.ab.ca/app24/costcalculators/machinery/getmachimpls.jsp**



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Operation	Location	Most Common 2002	Range 2003	Most Common 2003

Tillage

Plowing – crop & stubble	Alberta	—	—	—
– hay & pasture	Alberta	$10-30/ac $80-100/hr	$30-65/ac $80-135/hr	$30-65/ac $100/hr
Total reports = 8; Surveyed Fall 2003				
Discing – crop & stubble	Alberta	$8-32/ac $100-135/hr	$8-35/ac $100-140/hr	$8-35/ac $115-135/hr
– hay & pasture	Alberta	$10-12/ac $75-135/hr	$10-60/ac $55-140/hr	$10-13/ac $80-135/hr
Total reports = 53; Surveyed Fall 2003				
Rototilling – hay & pasture	Alberta	$125/hr* $95-100/ac*	$75-125/hr $95-100/ac*	$75-125/hr $95-100/ac*
Total reports = 2; Surveyed Fall 2003				
Cultivating	Alberta	$6-9/ac $85-90/hr	$4.75-10/ac $60-140/hr	$7-8/ac $85-90/hr
Total reports = 32; Surveyed Fall 2003				
Harrowing	Alberta	$1.75-3.50/ac	$1.75-6/ac	$2.50-5/ac
Total reports = 10; Surveyed Fall 2003				
Harrowing & packing	Alberta	$3-3.50/ac $100/hr*	$2.50-5.50/ac $100/hr*	$3-3.50/ac $100/hr*
Total reports = 6; Surveyed Fall 2003				

Seeding

Seeding – air seeder/airdrill	South	$10-16/ac	$8-23/ac	$13-18/ac
	Central	$10-14/ac	$7-18/ac	$12-14/ac
	North	$10-15/ac	$12-15/ac	$12-15/ac
Total reports = 71; Surveyed Summer & Fall 2003				
Seeding – press drill/hoe drill	Alberta	$7-10/ac	$10/ac*	$10/ac*
Total reports = 1; Surveyed Summer & Fall 2003				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 2002	Range 2003	Most Common 2003
Seeding – floater truck	South	$5.50-5.75/ac	$4-6.50/ac	$5.50-6/ac
	Central	$5-7/ac	$4-10.50/ac	$5-7/ac
	North	$4.75-5.95/ac	$4.50-5/ac	$4.50-5/ac
Total reports = 126; Surveyed Summer & Fall 2003				
Seeding – aerial	Alberta	$5.50-7.50/ac	$5.50-8/ac	$5.50/ac
Total reports = 17; Surveyed Summer & Fall 2003				
Seeding – no-till drill	Alberta	$12-17/ac	$11-25/ac	$14-15/ac
Total reports = 16; Surveyed Summer & Fall 2003				

Fertilizer Application

Liquid or granular fertilizer application – floater truck	South	$4.25-5.50/ac	$3.50-7.50/ac	$5-7/ac
	Central	$4.50-7/ac	$4-8/ac	$4.75-5.95/ac
	North	$4.25-5.25/ac	$4-7.50/ac	$4.50-5/ac
Total reports = 322; Surveyed Summer & Fall 2003				
Liquid or granular fertilizer application – fixed-wing aerial	Alberta	$5-6/ac	$5.50/ac	$5.50/ac
Total reports = 14; Surveyed Summer & Fall 2003				
Granular fertilizer application – truck mount	Alberta	$4.75/ac*	$3.95/ac*	$3.95/ac*
Total reports = 1; Surveyed Summer & Fall 2003				
Anhydrous fertilizer application – cultivator with cold flow kit	Alberta	$7-12/ac $30-70/T*	$5.75-12/ac —	$10-12/ac —
Total reports = 4; Surveyed Summer & Fall 2003				

Herbicide Application

Granular herbicide application – floater truck	Alberta	$4.50-5.50/ac	$4-7/ac	$5.50/ac
Total reports = 85; Surveyed Summer & Fall 2003				
Liquid or granular herbicide application – truck mount	Alberta	$2.25-5/ac	$2.50-6/ac	$2.50-6/ac
Total reports = 6; Surveyed Summer & Fall 2003				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 2002	Range 2003	Most Common 2003
Liquid herbicide application – high clearance	South	$4.50-6.50/ac	$4-8/ac	$4.50-6.50/ac
	Central	$4.50-6/ac	$4-6.45/ac	$4.75-6/ac
	North	$4.50-6/ac	$4-6/ac	$4.50-5/ac
Total reports = 260; Surveyed Summer & Fall 2003				
Liquid herbicide application – fixed-wing aerial	South	$4.50-6/ac	$4.50-8.50/ac	$4.50-6/ac
	Central	$4.50-6/ac	$4.50-8.50/ac	$5.50-6/ac
	North	$5.50-6.50/ac	$5.50-6.50/ac	$5.50-6.50/ac
Total reports = 56; Surveyed Summer & Fall 2003				

Grain Harvesting

Swathing	Alberta	$7-10/ac $60-85/hr	$4-15/ac $55-90/hr	$8-10/ac $70-80/hr
Total reports = 68; Surveyed Fall 2003				
Combining – straight cut or pickup header	South – dryland	$15-17/ac $100/hr*	$12-20/ac $100-150/hr	$16-20/ac $100-150/hr
(may be additional cost for fuel)	South – irrigated	$100-160/hr —	$25-30/ac $100/hr*	$25-30/ac $100/hr*
	Central	$15.50-18/ac $200-220/hr	$13-21/ac $70-225/hr	$17-18/ac $100-170/hr
	North	$16-21/ac $100-150/hr	— $95-165/hr	— $95-165/hr
Total reports = 48; Surveyed Fall 2003				
Combining & hauling to bin	South – dryland	$16-23/ac	$16-25/ac	$18-23/ac
	South – irrigated	$23-25/ac	$21-30/ac	$25-30/ac
	Central	$20/ac $140-200/hr	$17-30/ac $100-200/hr	$20-25/ac $125-185/hr
	North	$100-170/hr $16-21/ac	$100/hr* —	$100/hr* —
Total reports = 71; Surveyed Fall 2003				
Grain drying	Alberta	$55-65/hr $10-12/T —	$70-80/hr $11-13/T $0.23/bu*	$70-80/hr $11-13/T $0.23/bu*
Total reports = 6; Surveyed Fall 2003				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 2002	Range 2003	Most Common 2003

Grain Hauling

Grain hauling – less than 20 miles	Alberta	$4.50-6/T	$4-6.90/T	$4.50-5.50/T
		$49.82-75.20/hr	—	—
		$0.10-0.12/bu*	$0.10-0.12/bu*	$0.10-0.12/bu*
Grain hauling – 21-50 miles	Alberta	$6-8/T	$5.50-10.35/T	$6-7.25/T
Grain hauling – 51-100 miles	Alberta	$7.50-10/T	$6-11.50/T	$8-10/T
lmi=loaded mile		$4/lmi*	$4/lmi*	$4/lmi*
Grain hauling – 101-200 miles	Alberta	$11.50-15.50/T	$7-50-16.50/T	$11-15/T
lmi=loaded mile		$2.95-3.25/lmi	$3-3.25/lmi	$3-3.25/lmi
Grain hauling – over 200 miles	Alberta	$17.50-23.50/T	$15.50-35/T	$15.50-22.50/T
lmi=loaded mile		$2.95-3.05/lmi	$3-4/lmi	$3-3.25/lmi
Total reports = 246; Surveyed Fall 2003				

Haying

Cutting & conditioning hay –	South	$10-15/ac	$8-15/ac	$11-14/ac
mower conditioner	Central	$11-15/ac	$8-18/ac	$10-14/ac
		$100/hr	$50-100/hr	$75-100/hr
	North	$10-12/ac	$8-9/ac	$8-9/ac
Total reports = 70; Surveyed Fall 2003				
Baling – small square	Alberta	$0.40-0.50/bale	$0.40-1.25/bale	$0.40-0.45/bale
Total reports = 16; Surveyed Fall 2003				
Stacking & hauling – small square				
(less than 1 mile)	Alberta	$0.40-0.50/bale	$0.35-0.50/bale	$0.40-0.45/bale
Total reports = 14; Surveyed Fall 2003				
Baling, stacking & hauling – small square				
(less than 1 mile)	Alberta	$0.84-1.00/bale	$0.80-2/bale	$0.80-0.90/bale
Total reports = 11; Surveyed Fall 2003				
Baling – medium square	Alberta	$6-7/bale*	$8.50/bale*	$8.50/bale*
– large square		$11-12/bale	$12/bale	$12/bale
Total reports = 9; Surveyed Fall 2003				
Baling – medium round	Alberta	$7-7.50/bale	$7-7.50/bale	$7-7.50/bale
Total reports = 3; Surveyed Fall 2003				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 2002	Range 2003	Most Common 2003
Baling – large round	South	$7.50-8/bale	$6.50-10/bale	$8/bale
	Central	$7-9/bale	$5-12/bale	$7-8/bale
	North	$7-8/bale	$7-9/bale	$8/bale
Total reports = 77; Surveyed Fall 2003				
Stacking & hauling – large round				
(less than 5 miles)	Alberta	$2-2.75/bale	$1.75-4/bale	$1.75-4/bale
Total reports = 9; Surveyed Fall 2003				
Baling, stacking & hauling – large round				
(less than 5 miles)	Alberta	$8.75-11/bale	$8.75-14.50/bale	$8.75-14.50/bale
Total reports = 8; Surveyed Fall 2003				
Bale wrapping – large round				
(plastic wrap included)	Alberta	$6-7.35/bale	$7.35/bale*	$7.35/bale*
Total reports = 1; Surveyed Fall 2003				
Hay hauling – large round				
(up to 18 bales/load)	0-50 miles	$5-10/T	$3/lmi*	$3/lmi*
lmi=loaded mile		$2.25-4.50/bale	$1.95-6/bale	$5.50-6/bale
		$60-65/hr	$60-65/hr	$60-65/hr
Total reports = 21; Surveyed Fall 2003				
Hay hauling – large round				
(30 or more bales/load)	0-10 miles	$5-7/bale	$2-10/bale	$3-5.50/bale
lmi=loaded mile		$75-100/hr	$75-100/hr	$100/hr
		$3.75/lmi	$3.75/lmi*	$3.75/lmi*
	11-25 miles	$3.50-7/bale	$3.75-10/bale	$5-10/bale
		$75-100/hr	$75-100/hr	$100/hr
		$3.75/lmi	$3.75/lmi*	$3.75/lmi*
	26-60 miles	$15-20/T	$15-20/T	$15-20/T
		$3.75/lmi	$3-3.75/lmi	$3-3.75/lmi
		$3.75-10/bale	$4.44-10/bale	$6-10/bale
	Over 60 miles	$3.45-3.85/lmi	$3-4/lmi	$3.50-4/lmi
Total reports = 187; Surveyed Fall 2003				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Silage

Operation	Location	Most Common 2002	Range 2003	Most Common 2003
Cutting silage – swathing (4-12 ac/hr)	Alberta	$70-85/hr $10/ac $1/ton*	$55-140/hr $6.50-16/ac $1/ton*	$70-90/hr $8-10/ac $1/ton*
Total reports = 70; Surveyed Fall 2003				
Chopping silage (20-75 ton/hr)	Alberta	$200-325/hr $4.50-5/ton $23.50-40/load $3.50-4.75/tonne	$130-365/hr $4.50-5/ton — $3.50-5/tonne	$250-325/hr $4.50-5/ton — $4-5/tonne
Total reports = 54; Surveyed Fall 2003				
Hauling silage – truck & operator (1-5 mile haul)	Alberta	$50-75/hr $1/tonne*	$40-85/hr $1-2/tonne	$55-80/hr $1-2/tonne
Total reports = 80; Surveyed Fall 2003				
Packing silage – tractor with dozer loader or packer (25-60 tons/hr)	Alberta	$85/hr $1-1.10/tonne $1.25/ton*	$55-90/hr $1-1.10/tonne $1.25/ton*	$85/hr $1-1.10/tonne $1.25/ton*
Total reports = 41; Surveyed Fall 2003				
Chopping & hauling silage (1-5 mile haul)	Alberta	$325-350/hr $5-6/ton $30-70/load	$175-510/hr $5-6.50/tonne $50-70/load	$320-405/hr $6-6.50/tonne $50-70/load
Total reports = 46; Surveyed Fall 2003				
Swathing, chopping & hauling silage	Alberta	$8.50-9.37/tonne $180/hr*	$8.60/tonne* —	$8.60/tonne* —
Total reports = 1; Surveyed Fall 2003				
Swathing, chopping, hauling & packing silage	Alberta	$7.50-9.60/tonne $9/ton*	$7.50-9.70/tonne $9/ton*	$7.50/tonne $9/ton*
Total reports = 18; Surveyed Fall 2003				
Silage bagging – includes bag (customer provides tractor)	Alberta			
	Bag size 10x150	$1425-1575/bag	$1450-1575/bag	$1450-1575/bag
	Bag size 10x200	$1900-2000/bag	$1925-2000/bag	$1925-2000/bag
	Bag size 10x250	$2375-2450/bag	$2400-2450/bag	$2400-2450/bag
Total reports = 21; Surveyed Fall 2003				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

NOTE: Ton is an imperial ton. Tonne is a metric tonne.

Operation	Location	Most Common 2002	Range 2003	Most Common 2003
Silage chopping, hauling & bagging – includes bag	Alberta			
(customer may need to provide tractor)	Bag size 10x150	$2800-3150/bag	$2800-3150/bag	$2800-3150/bag
(1-3 mile haul)	Bag size 10x200	$3600-4000/bag	$3600-4000/bag	$3600-4000/bag
	Bag size 10x250	$4200-4900/bag	$4200-4900/bag	$4200-4900/bag
Total reports = 31; Surveyed Fall 2003				

Land Clearing and Breaking

Brushing & piling or repiling	Alberta			
(with a dozer blade)	D6 (140-180hp)	$100/hr	$75-120/hr	$100/hr
	D7 (180-200hp)	$100-110/hr	$85-125/hr	$100-115/hr
	D8 (225-335hp)	$130-140/hr	$130-150/hr	$130-150/hr
Total reports = 76; Surveyed Fall 2003				
Ripping or sub-soiling	Alberta	$125-160/hr	$174/hr*	$174/hr*
Total reports = 1; Surveyed Fall 2003				
Discing	Alberta	$80-135/hr	$70-165/hr	$90-115/hr
(higher rates for remote locations or tough terrain)		$12-60/ac	$12-60/ac	$13-35/ac
Total reports = 30; Surveyed Fall 2003				
Plowing	Alberta	$90-120/hr		
		$55-65/ac		
Total reports = 15; Surveyed Fall 2002				
Rototilling	Alberta	$70-250/hr	$75-125/hr	$75-125/hr
		$95-100/ac*	$95-100/ac*	$95-100/ac*
Total reports = 39; Surveyed Fall 2003				
Dugout construction, drainage, land leveling	Alberta			
	D6 Cat	$100/hr	$100-120/hr	$100/hr
	D7 Cat	$100-120/hr	$85-130/hr	$100-115/hr
	D8 Cat	$130-140/hr	$115-170/hr	$130-150/hr
	Excavators, scrapers and others	$70-150/hr	$65-180/hr $0.95-1.25/cu yd	$75-150/hr $1.20/cu yd
Total reports = 179; Surveyed Fall 2003				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 2002	Range 2003	Most Common 2003

Machinery Rental

Anhydrous ammonia applicator – pull type	Alberta	$1-3/ac	N/C-3/ac	$1.25-1.75/ac
(rental cost with product purchase)		$20-40/T	$10-70/T	$30-40/T
Total reports = 73; Surveyed Summer & Fall 2003				
Liquid fertilizer applicator – pull type	Alberta	$0.50-5/ac	$0.50-5/ac	$0.50-5/ac
(rental cost with product purchase)		$250/setup*	$250/setup*	$250/setup*
Total reports = 13; Surveyed Summer & Fall 2003				
Granular fertilizer applicator – pull type	South	$0.50-1/ac	N/C-2/ac	$1/ac
(rental cost with product purchase)		$7-10/T	$5-12/T	$5-12/T
	Central	$1-2/ac	$0.50-2/ac	$1-1.50/ac
		$8-10/T	$5-15/T	$6-10/T
		$50/day*	$50-100/day	$50-100/day
	North	N/C-1.50/ac	—	—
		$5-10/T	—	—
		$75-100/day	$50-75/day	$50-75/day
Total reports = 163; Surveyed Summer & Fall 2003				
Granular herbicide applicator – pull type	Alberta	$1-2.50/ac	$0.75-3/ac	$1-2.50/ac
(rental cost with product purchase)		$50-100/day	$50-75/day	$50-75/day
Total reports = 51; Surveyed Summer & Fall 2003				

Soil Testing

Soil testing	Alberta			
(lab fees included)	Four nutrients	$30-75/field	$25-75/field	$35-60/field
	GPS referenced	$50-80/field	$35-80/field	$35-60/field
	With micronutrients	$50-70/field	$40-100/field	$55-85/field
	GPS referenced	$60-80/field	$29-105/field	$55-85/field
(lab fees not included)		$25-30/field	$5-80/field	$10-30/ac
Total reports = 274; Surveyed Summer & Fall 2003				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 2002	Range 2003	Most Common 2003

Grain Processing

Grinding (mixing cost included)	Alberta	$15-20/T	$14.30-25/T	$15-22/T
Total reports = 10; Surveyed Fall 2003				
Dry rolling (mixing cost included)	Alberta	$15-20/T	$14.30-25/T	$15-20/T
Total reports = 11; Surveyed Fall 2003				
Steam rolling (mixing cost included)	Alberta	$22-33/T	$22-35/T	$22-35/T
Total reports = 4; Surveyed Fall 2003				
Pelleting (mixing cost included)	Alberta	$19-20/T	$19-20/T	$19-20/T
Total reports = 2; Surveyed Fall 2003				
Processed grain delivery	Alberta	$7-12/T	$7-12/T	$7-12/T
(7-13 tonne load)		$35-90/load	$35-90/load	$35-90/load
(0-35 miles)		$55/hr*	$55/hr*	$55/hr*
Total reports = 9; Surveyed Fall 2003				

Livestock Hauling

Possum belly liner	Alberta	0-20 miles	$140-200/load	$120-250/load	$140-200/load
(50,000-65000 lb)			$70-100/hr	$70-100/hr	$70-100/hr
lmi=loaded mile		21-50 miles	$205-285/load	$170-330/load	$180-285/load
			$3-3.50/lmi	$3-4/lmi	$3-4/lmi
		51-100 miles	$275-400/load	$240-475/load	$300-435/load
			$4/lmi	$3-4/lmi	$3-4/lmi
		100+ miles	$3.25-4/lmi	$2.80-4/lmi	$3-3.95/lmi
			$400-640/load	$340-850/load	$435-690/load
			$1.50-1.80/cwt	$1.50-1.80/cwt*	$1.50-1.80/cwt*
Total reports = 400; Surveyed Fall 2003					
Straight liner, body job & gooseneck		Alberta	$90-300/load	$90-300/load	$90-300/load
(16,000-42,000 lb)			$2.65-2.70/lmi	$2.60-3.25/lmi	$2.60-3.25/lmi
lmi=loaded mile			$1.60/cwt*	$1.60-1.75/cwt	$1.60-1.75/cwt
lkm=loaded kilometre			$1.60/lkm*	$2/lkm*	$2/lkm*
Total reports = 39; Surveyed Fall 2003					
Hog hauling					
lkm=loaded kilometre		Alberta	$1.60/lkm*	$1.75/cwt*	$1.75/cwt*
Total reports = 1; Surveyed Fall 2003					

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 2002	Range 2003	Most Common 2003

Livestock Feeding

Overwintering cows (calving extra)	Alberta			
– customer supplies feed		$0.60-1.35/hd/day	$0.50-1.75/hd/day	$0.50-1.75/hd/day
– feed included		$1.80-2.60/hd/day	$1.50-2.35/hd/day	$1.50-2.35/hd/day
Total reports = 6; Surveyed Spring 2003				

Corral Cleaning

Corral cleaning –	Alberta			
loader, 4 spreaders, 5 operators		$325-355/hr	$295-357/hr	$300-350/hr
loader, 3 spreaders, 4 operators		$220-285/hr	$200-330/hr	$230-290/hr
loader, 2 spreaders, 3 operators		$150-200/hr	$150-265/hr	$165-220/hr
loader, 1 spreader, 2 operators		$120-165/hr	$90-170/hr	$120/hr
loader only, 1 operator, for stockpiling		$65-90/hr	$50-150/hr	$55-120/hr
Total reports = 354; Surveyed Fall 2003				

Fencing

Barbed wire fence construction	Alberta	$1400-2000/mi	$1400-2500/mi	$1500-2000/mi
(labour & equipment)		$60-80/hr	$60-125/hr	$60-80/hr
		$4.25/m*	$4.25/m*	$4.25/m*
Total reports = 67; Surveyed Fall 2003				
Page wire fence construction	Alberta	$55-80/hr	$55-80/hr	$80/hr
(labour & equipment)		$6.35/m*	$6.35/m*	$6.35/m*
Total reports = 19; Surveyed Fall 2003				
Post pounding				
(labour & equipment)	Alberta	$60-80/hr	$35-85/hr	$60-80/hr
Total reports = 35; Surveyed Fall 2003				
Barbed wire fence removal	Alberta	$600-800/mi	$600-800/mi	$600-800/mi
(labour & equipment)		$60-80/hr	$65-85/hr*	$65-85/hr*
		$1-1.50/m	$1/m*	$1/m*
Total reports = 12; Surveyed Fall 2003				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Land Leasing Summary 2002

Cash Rent – cropland	Location	Average 2000	Range 2002	Most Common 2002	Average 2002
	South – irrigated	$59.46/ac	$25-175/ac	$40-80/ac	$51.70/ac
	South – dryland	$32.10/ac	$8-45/ac	$30-45/ac	$30.94/ac
	Central	$30.56/ac	$7.50-65/ac	$25-50/ac	$33.92/ac
	North	$29.07/ac	$10-30/ac	$15-20/ac	$18.09/ac

Total reports = 272; Surveyed Spring 2003

Length of Lease – cropland	Cash Rent		Crop Share	
Years	Number of leases	%	Number of leases	%
1	57	21	34	53
2	9	3	0	0
3	48	18	6	9
4	2	1	0	0
5	120	44	5	8
6+	36	13	19	30
Total	272	100	64	100

Total reports = 336; Surveyed Spring 2003

Type of Lease – cropland	Cash Rent		Crop Share	
Location	Number of leases	%	Number of leases	%
South	30	67	15	33
Central	228	85	39	15
North	13	62	8	38

Total reports = 336; Surveyed Spring 2003

These are survey results only – not recommended rates.

Land Leasing Summary 2002

Cash Rent – cropland	Location	Average 2000	Range 2002	Most Common 2002	Average 2002
	South – irrigated	$59.46/ac	$25-175/ac	$40-80/ac	$51.70/ac
	South – dryland	$32.10/ac	$8-45/ac	$30-45/ac	$30.94/ac
	Central	$30.56/ac	$7.50-65/ac	$25-50/ac	$33.92/ac
	North	$29.07/ac	$10-30/ac	$15-20/ac	$18.09/ac

Total reports = 272; Surveyed Spring 2003

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Total	272	100	64	100

Total reports = 336; Surveyed Spring 2003

Type of Lease – cropland	Cash Rent		Crop Share	
Location	Number of leases	%	Number of leases	%
South	30	67	15	33
Central	228	85	39	15
North	13	62	8	38

Total reports = 336; Surveyed Spring 2003

These are survey results only – not recommended rates.

Cropshare Rental – cropland	Location	Landlord:Tenant	No. of Leases	% Reporting	Notes
Alberta	South	1/5:4/5	1	7	Tenant pays all but taxes
		2/5:3/5	1	7	in 10 of 15 agreements
		1/4:3/4	2	13	
		1/3:2/3	11	73	
	Central	1/5:4/5	3	8	Tenant pays all but taxes
		1/4:3/4	6	15	in 13 of 39 agreements
		1/3:2/3	28	72	
		2/5:3/5	1	3	
		1/2:1/2	1	3	
	North	1/5:4/5	0	0	Tenant pays all but taxes
		1/4:3/4	5	71	in 4 of 8 agreements
		1/3:2/3	2	29	
		1/2:1/2	0	0	

Total reports = 64; Surveyed Spring 2003

Cash Rent – private pasture	Location	Most Common 2002	Range 2003	Most Common 2003
	South	$7.50-21/AUM	$7.50-25.70/AUM	$15-20/AUM
		$18/hd/mo*	$7.50-11.25/hd/mo	$7.50-11.25/hd/mo
		$28/ac*	$17-32/ac	$17-32/ac
	Central	$14-24/AUM	$10-35/AUM	$20-30/AUM
		$15/hd/mo*	$9.30-20/hd/mo	$15-18/hd/mo
		$10-30/ac	$10.15-50/ac	$12.50-30/ac
	North	$15-20/ac	$4.37-15/AUM	$4.37-15/AUM

Total reports = 105; Surveyed Spring 2003

Crown Land	Location	Total Acreage	*Rate/AUM 2002	Rate/AUM 2003
	South	3,100,000	2.79	2.79
	Central	800,000	2.32	2.32
	North	1,700,000	1.39	1.39

Surveyed Spring 2003

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Alberta Average Farm Input Prices

Agricultural input prices

The following average prices are based on prices quoted the first week of each month at 18 centres across Alberta. These prices are intended as a guide only. Actual current prices may differ.

Items	Average 2001	Average 2002	Average 2003
Building Supplies			
Constr. grade lumber 2x6 spruce, metre	$ 542.54	$ 579.14	$ 545.96
Rough grade lumber 2x8 spruce, metre	$ 559.53	$ 548.05	$ 538.02
Sheathing, ply., spruce, 3/8", 4'x8' sht	$ 14.92	$ 15.78	$ 18.17
Ready-mix concrete, 20 mpa, cubic metre	$ 127.41	$ 129.83	$ 132.78
Fence posts, std. gr., treated, 3-4" diam., 7' length, ea.	$ 3.14	$ 3.13	$ 3.05
Nails, std. grd., 4" spiral, 50 lb box	$ 42.50	$ 45.28	$ 45.68
Pipe, plastic, 3/4", 75 psi., 100' coil	$ 25.11	$ 26.30	$ 25.68
Rods, re-enforcing 1/2", 6 metres	$ 3.88	$ 3.80	$ 3.77
Barbed wire, 12 gauge, double strand	$ 43.49	$ 45.24	$ 47.12
Machinery Repairs			
Truck tires, 1st line, P235-85R-16, each, env. tax incl.	$ 138.05	$ 155.76	$ 158.71
Battery, 525 cranking amp, each	$ 78.71	$ 80.03	$ 80.75
V-belt, 1/2" x 70", ea.	$ 10.01	$ 11.05	$ 11.52
Antifreeze, 4 litres	$ 9.51	$ 9.91	$ 10.94
Mech. repairs, per hour	$ 59.94	$ 62.18	$ 64.23

Source: Alberta Agriculture, Food and Rural Development, Statistics and Data Development Unit

Items	Average 2001	Average 2002	Average 2003

Crop Supplies

Baler twine, plastic, 28000' bale	$ 28.15	$ 28.04	$ 28.47
Fertilizer, 46-0-0, tonne, bulk	$ 390.20	$ 334.61	$ 404.01
Fertilizer, 11-51-0, tonne, bulk	$ 402.29	$ 400.26	$ 421.59
Fertilizer, 82-0-0, tonne, bulk (applicator inc.)	$ 629.94	$ 527.84	$ 628.46
Refine extra, granular, 320 gram	$ 213.85	$ 215.12	$ 217.79
Assert 300 SC, liquid, 10.8 litre	$ 243.89	$ 242.64	$ 247.72
Roundup transorb, liquid, 10 litre	$ 92.23	$ 91.47	$ 89.75
Seed; wheat, #1, 100 kg., bulk	$ 28.09	$ 28.93	$ 36.26
Seed; barley, #1, 100 kg., bulk	$ 26.86	$ 28.74	$ 35.14
Seed; conventional canola, #1, treated, 100 kg., bagged	$ 449.30	$ 552.19	$ 646.61
Seed; herb. tolerant canola, #1, treated, 100 kg., bagged	$ 750.15	$ 795.03	$ 839.72

Feeds

Calf starter supp., 20-24%, tonne (bulk)	$ 380.74	$ 394.66	$ 391.41
Dairy supp., 32%, tonne (bulk)	$ 424.15	$ 437.88	$ 444.23
Feedlot supp., pellets, 32%, excl. Ionophore, tonne (bulk)	$ 285.80	$ 294.16	$ 295.47
Hog grower ration, 15%, tonne (bulk)	$ 273.42	$ 278.64	$ 289.15
Dual purp. Swine supp., 40%, tonne (bulk)	$ 476.70	$ 479.25	$ 497.16
Broiler grower complete feed, 18-20%, tonne (bulk)	$ 332.05	$ 318.45	$ 334.41
Cattle mineral, 25 kg.	$ 20.29	$ 20.94	$ 21.51
Feed barley, #1, (farm gate), bushel	$ 2.54	$ 3.28	$ 2.89
Feed wheat, #1, (farm gate), bushel	$ 3.01	$ 4.02	$ 3.95
Hay, good quality baled, ton	$ 91.89	$ 123.27	$ 108.78

Source: Alberta Agriculture, Food and Rural Development, Statistics and Data Development Unit

Items	Average 2001	Average 2002	Average 2003
Livestock Supplies			
Penicillin, injectable, 300 mg/ml, 250 ml	$ 14.43	$ 15.10	$ 15.46
Vitamin A D E., injectable, 250 ml	$ 24.50	$ 25.00	$ 25.01
Fuel and Oil			
Purple gas, 100 litres (minus prov. rebate only)	$ 53.96	$ 51.90	$ 57.28
Diesel fuel, 100 litres (minus prov. rebate only)	$ 40.82	$ 36.23	$ 42.04
Propane, bulk, 100 litres	$ 39.71	$ 30.71	$ 39.42
Natural gas, GJ (excluding svc. or del. charge)	$ 7.35	$ 4.48	$ 7.00
Electricity, farm use, 100 kwh (excl. svc. or del. charge)	$ 10.98	$ 6.58	$ 6.09
Oil, for diesel engines, 5 litres	$ 10.63	$ 11.08	$ 11.52
Other			
Farm labour, per month, without board	$ 1,894.41	$ 1,966.43	$ 1,988.05
Tractor 100-110 hp, diesel, fwd	$ 87,899.49	$ 94,001.92	$ 95,771.75
Tractor 300-325 hp, diesel, 4wd	$ 193,278.61	$ 201,016.26	$ 210,573.75
Combine, SP, diesel, 250-300 hp, 210-240 bu hopper	$ 252,504.63	$ 251,170.74	$ 258,270.61
Air drill, 40-42', w/packer wheels, 325 bu tank	$ 125,335.07	$ 125,131.54	$ 128,628.03
Sprayer, pt, 800-900 gal. tank, 90-100' boom	$ 32,335.02	$ 32,577.38	$ 33,132.31
Round baler, pull type	$ 38,158.62	$ 38,607.22	$ 39,349.16
Double disc, hvy duty 19'-21'	$ 28,980.15	$ 31,291.55	$ 31,794.63
Truck, 3/4 ton 4x4, 4 spd. Auto., 302/305 V8	$ 32,261.17	$ 32,898.14	$ 33,746.42
Grain bin, hopper btm., 3500 bushel	$ 8,096.60	$ 8,514.58	$ 8,617.35

Source: Alberta Agriculture, Food and Rural Development, Statistics and Data Development Unit

Farm Machinery Costs

How to use the farm machinery cost guide

- If you are a **full-time custom operator**, then use the Total Machine Cost + Labor + Profit for estimating a charge. Be sure to adjust fixed costs if your annual hours of use differ much from those quoted.
  Note: Labor and profit margin are not included in the tables on pages 20 through 29.
- If you are doing custom work on a **good neighbor payment basis**, then it may not be necessary to recover all the fixed costs of owning the machine since these costs represent an annual cost incurred whether or not custom work is done. However, the rate should cover all variable costs that include an allowance for repairs. Labor and profit margin can be adjusted to meet each situation.
- If you plan to do custom work in addition to your own work, so as to partly justify the ownership of a larger machine, then the custom charge should cover variable costs, labor, a profit margin **plus** a proportion of fixed costs calculated as follows:

$$\text{Proportion of Fixed Costs} = \text{Hours of Custom Work} \times \left[\frac{\text{Total fixed costs}}{\text{Total annual hours of use}}\right]$$

- If you are renting out machinery, then you will wish to cover fixed costs at least and those variable costs such as lubrication and repairs that may not be already covered by the renter.
- If you wish to assess a rate for a full operation such as silage making, which requires several machines, then add the hourly costs of each activity, making sure there is neither omission nor duplication. Use the worksheets provided in this book. The purchase cost estimates are based on average cash prices as of December 2003 for each class of machine. These estimates represent current replacement costs that should be budgeted and charged for, even if you do custom work with older machines, unless the older machine will not do a comparable job.

Key assumptions

Estimated years of life, annual hours of use and annual repair rates are specified for each type of machine. The salvage value of each machine is listed as a per cent of the new price.

Diesel fuel is charged at $0.39 per litre and propane at $0.419 per litre. Fuel costs vary throughout the year with supply and demand.

Return on investment is calculated using a Bank of Canada 60-day T-bill rate of 2.77 per cent with an additional allowance for risk of 6 per cent. Inflation was included at a 2.0 per cent rate. Income tax considerations have not been included in the calculations.

Other considerations

- Favorable or unfavorable working conditions, such as size of job, distance, access, topography, soil type and possible downtime, may modify the guide figures. Per hour charges allow for some of these situations.
- Different soils and topography may require power units of a different size than those shown here.
- Charges per unit of output such as per acre, per bushel or per bale defined on work rates per hour may be quite different from those quoted. Per hour charging overcomes some of these uncertainties.
- You can adjust the labor charge according to your actual cost of hired work or the opportunity cost of your own labor.
- If your experience and farm records suggest that other costs and assumptions would suit your situation, then recalculate using the worksheets in this book, or use the online **Machinery Cost Calculator at http://www1.agric.gov.ab.ca/app24/costcalculators/machinery/getmachimpls.jsp**
- Earlier and faster may be cheaper. There are costs attached to late completion of operations. The rewards for timely, quality work quickly completed by large machines are only earned if the support system, including seed and fertilizer supplies as well as grain trucking, is well organized.

Years life = 10
Annual use (hrs) = 200, 400*, 600
Annual repair rate = 3% of replacement cost
Salvage value = 50% replacement cost

Tractor – Front Wheel Assist

	Annual Hours of Use (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost (Labor Omitted) ($/hr)	Total Machine Cost ($/hr)
	200			17.07		22.47
40 HP without cab	400	7	30,160	8.53	5.40	13.94
	600			5.69		11.09
	200			22.69		30.18
60 HP without cab	400	10	40,090	11.34	7.49	18.84
	600			7.56		15.05
	200			39.65		50.73
80 HP	400	13	70,060	19.82	11.09	30.91
	600			13.22		24.30
	200			48.83		62.93
100 HP	400	17	86,290	24.42	14.10	38.51
	600			16.28		30.37
	200			59.20		76.01
120 HP	400	20	104,600	29.60	16.82	46.41
	600			19.73		36.55
	200			70.97		91.59
150 HP	400	25	125,400	35.48	20.62	56.10
	600			23.66		44.27
	200			94.79		120.36
175 HP	400	29	167,500	47.40	25.57	72.97
	600			31.60		57.17
	200			85.10		109.83
180 HP	400	30	150,375	42.55	24.73	67.28
	600			28.37		53.10
	200			102.30		132.01
215 HP	400	36	180,770	51.15	29.70	80.86
	600			34.10		63.80
	200			127.33		160.80
220 HP	400	37	225,000	63.67	33.47	97.14
	600			42.44		75.91
	200			138.65		175.86
250 HP	400	42	245,000	69.33	37.21	106.54
	600			46.22		83.43

* This Annual Hours Used figure is typical.

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Years life = 12
Annual use (hrs) = 200, 400*, 600
Annual repair rate = 3% of replacement cost
Salvage value = 50% replacement cost

Tractor – 4-Wheel Drive

	Annual Hours of Use (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost (Labor Omitted) ($/hr)	Total Machine Cost ($/hr)
	200			62.96		80.03
110 HP bi-directional**	400	18	120,000	31.48	17.07	48.55
	600			20.99		38.06
	200			86.74		119.32
275 HP**	400	45	165,330	43.37	32.58	75.95
	600			28.91		61.49
	200			103.18		140.35
300 HP	400	50	196,670	51.59	37.18	88.78
	600			34.39		71.57
	200			118.92		161.93
350 HP	400	58	226,670	59.46	43.01	102.47
	600			39.64		82.65
	200			129.41		179.75
425 HP	400	71	246,670	64.71	50.34	115.05
	600			43.14		93.48

* This Annual Hours Used figure is typical.

** Priced with PTO

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Years life = 10
Annual use (hrs) = 200, 400*, 600
Annual repair rate = 3% of replacement cost
Salvage value = 50% replacement cost

Tractor – Front Wheel Assist

	Annual Hours of Use (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost (Labor Omitted) ($/hr)	Total Machine Cost ($/hr)
	200			17.07		22.47
40 HP without cab	400	7	30,160	8.53	5.40	13.94
	600			5.69		11.09
	200			22.69		30.18
60 HP without cab	400	10	40,090	11.34	7.49	18.84
	600			7.56		15.05
	200			39.65		50.73
80 HP	400	13	70,060	19.82	11.09	30.91
	600			13.22		24.30
	200			48.83		62.93
100 HP	400	17	86,290	24.42	14.10	38.51
	600			16.28		30.37
	200			59.20		76.01
120 HP	400	20	104,600	29.60	16.82	46.41
	600			19.73		36.55
	200			70.97		91.59
150 HP	400	25	125,400	35.48	20.62	56.10
	600			23.66		44.27
	200			94.79		120.36
175 HP	400	29	167,500	47.40	25.57	72.97
	600			31.60		57.17
	200			85.10		109.83
180 HP	400	30	150,375	42.55	24.73	67.28
	600			28.37		53.10
	200			102.30		132.01
215 HP	400	36	180,770	51.15	29.70	80.86
	600			34.10		63.80
	200			127.33		160.80
220 HP	400	37	225,000	63.67	33.47	97.14
	600			42.44		75.91
	200			138.65		175.86
250 HP	400	42	245,000	69.33	37.21	106.54
	600			46.22		83.43

* This Annual Hours Used figure is typical.

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Years life = 12
Annual use (hrs) = 200, 400*, 600
Annual repair rate = 3% of replacement cost
Salvage value = 50% replacement cost

Tractor – 4-Wheel Drive

	Annual Hours of Use (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost (Labor Omitted) ($/hr)	Total Machine Cost ($/hr)
	200			62.96		80.03
110 HP bi-directional**	400	18	120,000	31.48	17.07	48.55
	600			20.99		38.06
	200			86.74		119.32
275 HP**	400	45	165,330	43.37	32.58	75.95
	600			28.91		61.49
	200			103.18		140.35
300 HP	400	50	196,670	51.59	37.18	88.76
	600			34.39		71.57
	200			118.92		161.93
350 HP	400	58	226,670	59.46	43.01	102.47
	600			39.64		82.65
	200			129.41		179.75
425 HP	400	71	246,670	64.71	50.34	115.05
	600			43.14		93.48

* This Annual Hours Used figure is typical.

** Priced with PTO.

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Tillage Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	(acre/hr)	($/acre)
HD cultivators	Life = 15	Annual hours use = 250		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
15' single		80	18,310	19.82	11.09	8.29	4.39	43.59	5.9	7.34
24' wing		150	24,005	35.48	20.62	10.87	5.76	72.73	9.3	7.79
32' wing		180	29,970	42.55	24.73	13.57	7.19	88.05	13.2	6.69
42' wing		275	43,350	43.37	32.58	19.63	10.40	105.98	17.8	5.95
60' wing		350	63,170	59.46	43.01	28.60	15.16	146.24	25.5	5.75
Field cultivators	Life = 15	Annual hours use = 250		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
24' wing		100	25,750	24.42	14.10	11.66	6.18	56.35	10.2	5.53
32' wing		150	26,250	35.48	20.62	11.89	6.30	74.29	13.6	5.47
42' wing		180	41,600	42.55	24.73	18.84	9.98	96.10	17.8	5.39
Discs – tandem HD	Life = 15	Annual hours use = 150		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
16' single		120	21,000	29.60	16.82	15.85	8.40	70.66	6.8	10.41
24' wing		180	33,170	42.55	24.73	25.03	13.27	105.58	10.2	10.37
30' wing		215	41,330	51.15	29.70	31.19	16.53	128.58	12.7	10.10
12' heavy offset		150	20,750	35.48	20.62	15.66	8.30	80.06	5.1	15.73
16' heavy offset		180	25,000	42.55	24.73	18.87	10.00	96.15	6.8	14.17
Rototillers	Life = 15	Annual hours use = 100		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
5' rotor		80	3,410	19.82	11.09	3.86	2.05	36.82	1.3	28.93
6' rotor		100	3,680	24.42	14.10	4.17	2.21	44.89	1.5	29.39
8' rotor		120	5,920	29.60	16.82	6.70	3.55	56.67	2.0	27.83
Harrows	Life = 15	Annual hours use = 40		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
Spring tooth 50'		100	12,960	24.42	14.10	36.68	6.48	81.67	29.7	2.75
Spring tooth 80'		150	17,890	35.48	20.62	50.63	8.95	115.68	47.5	2.43
Harrow packers 60'		150	24,205	35.48	20.62	68.50	12.10	136.70	21.2	6.44
Harrow packers 70'		180	28,680	42.55	24.73	81.16	14.34	162.79	29.7	5.48
Heavy harrow 60'		180	24,330	42.55	24.73	68.85	12.17	148.30	29.7	4.99
Heavy harrow 70'		210	29,335	51.15	29.70	83.02	14.67	178.54	29.7	6.01

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Seeding Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre/hr)	Total Machine Cost ($/acre)
Seed drills	Life = 6	Annual hours use = 100		Annual repair rate = 2% replacement cost			Salvage value = 50% replacement cost			
Hoe drill 12'		80	25,100	19.82	11.09	36.87	5.02	72.80	4.4	16.55
Zero/Min. till 10'		80	39,000	19.82	11.09	57.30	7.80	96.01	3.6	26.40
Air seeder w/cult.	Life = 6	Annual hours use = 150		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
30' air seeder		180	98,000	42.55	24.73	95.98	19.60	182.87	10.9	16.76
40' air seeder		300	109,100	51.59	37.18	106.85	21.82	217.44	14.5	14.95
50' air seeder		350	127,660	59.46	43.01	125.03	25.53	253.04	18.2	13.92
Air drills	Life = 6	Annual hours use = 150		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
30' air drill with packer wheels		180	99,000	42.55	24.73	96.96	19.80	184.05	10.9	16.87
40' air drill with packer wheels		300	116,660	51.59	37.18	114.26	23.33	226.36	14.5	15.56
50' air drill with packer wheels		425	140,395	64.71	50.34	137.51	28.08	280.63	18.2	15.43

Spraying Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre/hr)	Total Machine Cost ($/acre)
Sprayer (trailer)	Life = 15	Annual hours use = 50		Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost			
800 gallon 80'		150	26,910	35.48	20.62	52.12	16.15	124.38	40.7	3.05
1200 gallon 110'		150	35,905	35.48	20.62	69.54	21.54	147.18	56.0	2.63
Sprayer (SP)	Life = 10	Annual hours use = 200		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
800 gallon 90' 150-200 HP high clearance		200	225,000	127.33	48.55			175.88	65.50	2.69
1000 gallon 120' 250 HP		200	253,125	143.25	56.81			200.06	87.37	2.29

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Tillage Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	(acre/hr)	($/acre)
HD cultivators	Life = 15	Annual hours use = 250		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
15' single		80	18,310	19.82	11.09	8.29	4.39	**43.59**	5.9	**7.34**
24' wing		150	24,005	35.48	20.62	10.87	5.76	**72.73**	9.3	**7.79**
32' wing		180	29,970	42.55	24.73	13.57	7.19	**88.05**	13.2	**6.69**
42' wing		275	43,350	43.37	32.58	19.63	10.40	**105.98**	17.8	**5.95**
60' wing		350	63,170	59.46	43.01	28.60	15.16	**146.24**	25.5	**5.75**
Field cultivators	Life = 15	Annual hours use = 250		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
24' wing		100	25,750	24.42	14.10	11.66	6.18	**56.35**	10.2	**5.53**
32' wing		150	26,250	35.48	20.62	11.89	6.30	**74.29**	13.6	**5.47**
42' wing		180	41,600	42.55	24.73	18.84	9.98	**96.10**	17.8	**5.39**
Discs – tandem HD	Life = 15	Annual hours use = 150		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
16' single		120	21,000	29.60	16.82	15.85	8.40	**70.66**	6.8	**10.41**
24' wing		180	33,170	42.55	24.73	25.03	13.27	**105.58**	10.2	**10.37**
30' wing		215	41,330	51.15	29.70	31.19	16.53	**128.58**	12.7	**10.10**
12' heavy offset		150	20,750	35.48	20.62	15.66	8.30	**80.06**	5.1	**15.73**
16' heavy offset		180	25,000	42.55	24.73	18.87	10.00	**96.15**	6.8	**14.17**
Rototillers	Life = 15	Annual hours use = 100		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
5' rotor		80	3,410	19.82	11.09	3.86	2.05	**36.82**	1.3	**28.93**
6' rotor		100	3,680	24.42	14.10	4.17	2.21	**44.89**	1.5	**29.39**
8' rotor		120	5,920	29.60	16.82	6.70	3.55	**56.67**	2.0	**27.83**
Harrows	Life = 15	Annual hours use = 40		Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost		
Spring tooth 50'		100	12,960	24.42	14.10	36.68	6.48	**81.67**	29.7	**2.75**
Spring tooth 80'		150	17,890	35.48	20.62	50.63	8.95	**115.68**	47.5	**2.43**
Harrow packers 60'		150	24,205	35.48	20.62	68.50	12.10	**136.70**	21.2	**6.44**
Harrow packers 70'		180	28,680	42.55	24.73	81.16	14.34	**162.79**	29.7	**5.48**
Heavy harrow 60'		180	24,330	42.55	24.73	68.85	12.17	**148.30**	29.7	**4.99**
Heavy harrow 70'		210	29,335	51.15	29.70	83.02	14.67	**178.54**	29.7	**6.01**

400 Annual Hours of Tractor Use figures are used to determine above *Power Unit* costs.

Seeding Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	(acre/hr)	($/acre)
Seed drills	Life = 6	Annual hours use = 100		Annual repair rate = 2% replacement cost				Salvage value = 50% replacement cost		
Hoe drill 12'		80	25,100	19.82	11.09	36.87	5.02	72.80	4.4	16.68
Zero Min. till 10'		80	39,000	19.82	11.09	57.30	7.80	96.01	3.6	26.40
Air seeder w/cult.	Life = 6	Annual hours use = 150		Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
30' air seeder		180	98,000	42.55	24.73	95.98	19.60	182.87	10.9	16.76
40' air seeder		300	109,100	51.59	37.18	106.85	21.82	217.44	14.5	14.95
50' air seeder		350	127,660	59.46	43.01	125.03	25.53	253.04	18.2	13.92
Air drills	Life = 6	Annual hours use = 150		Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
30' air drill with packer wheels		180	99,000	42.55	24.73	96.96	19.80	184.05	10.9	16.87
40' air drill with packer wheels		300	116,660	51.59	37.18	114.26	23.33	226.36	14.5	15.56
50' air drill with packer wheels		425	140,395	64.71	50.34	137.51	28.08	280.63	18.2	15.43

Spraying Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	(acre/hr)	($/acre)
Sprayer (trailer)	Life = 15	Annual hours use = 50		Annual repair rate = 3% replacement cost				Salvage value = 10% replacement cost		
800 gallon 80'		150	26,910	35.48	20.62	52.12	16.15	124.36	40.7	3.05
1200 gallon 110'		150	35,905	35.48	20.62	69.54	21.54	147.18	56.0	2.63
Sprayer (SP)	Life = 10	Annual hours use = 200		Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
800 gallon 90' 150-200 HP high clearance		200	225,000	127.33	48.55			175.88	65.50	2.69
1000 gallon 120' 250 HP		200	253,125	143.25	56.81			200.06	87.37	2.29

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Forage Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre/hr)	Total Machine Cost ($/acre)
Swather (SP)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
Diesel with 20' header		100	79,715	107.45	29.75			137.20	8.5	16.14
Diesel with 30' header		100	87,375	117.78	34.29			152.06	12.75	11.93
Swather (pull-type)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
25' grain		80	18,450	19.82	11.09	24.87	5.54	61.31	8.9	6.88
30' grain		110	19,430	19.82	11.09	26.19	5.83	62.93	10.6	5.93
Disk mower	Life = 6	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
15' SP diesel		100	105,750	155.36	48.91			204.27	6.4	31.92
9'		80	27,330	19.82	11.09	40.15	8.20	79.26	3.8	20.76
12'		100	34,690	24.42	14.10	50.96	10.41	99.88	5.1	19.62
Mower conditioner	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
14' SP diesel		100	105,759	142.56	39.35			181.91	5.93	30.68
9' PTO		80	27,330	19.82	11.09	36.84	8.20	75.95	3.8	19.89
12' PTO		100	34,690	24.42	14.10	46.76	10.41	95.68	5.1	18.79
Rotary mowers	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
10' heavy duty		100	13,500	24.42	14.10	18.20	4.05	60.76	4.2	14.32
26' wing type		150	27,358	35.48	20.62	36.88	8.21	101.19	11.0	9.17
Rake	Life = 15	Annual hours use = 50		Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost			
9' parallel bar		40	10,170	8.53	5.40	23.02	6.10	43.06	3.8	11.28
10' rotary bar		40	11,170	8.53	5.40	25.29	6.70	45.93	3.8	12.03
Forage harvester	Life = 6	Annual hours use = 400		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
SP 350 HP		400	249,679	91.70	44.74			136.44	8.5	16.05
SP 450 HP		400	298,330	109.57	56.01			165.58	8.5	19.48
20" pulltype		150	43,375	35.48	20.62	15.93	3.25	75.29	6.8	11.09
26" pulltype		180	48,500	42.55	24.73	17.81	3.64	88.73	8.5	10.46
Dump wagon	Life = 15	Annual hours use = 200		Annual repair rate = 2% replacement cost			Salvage value = 10% replacement cost			
Small (700 cu ft)			17,450			9.88	1.75	11.60		
Medium (900 cu ft)			24,930			14.11	2.49	16.60		
Large (1200 cu ft) conveyor type			46,075			26.08	4.61	30.69		

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Baling Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (bale/hr)	Total Machine Cost ($/bale)
Balers (standard)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost				
Small 14" x 18"		60	21,875	11.34	7.49	29.49	6.56	54.88	200.0	0.27
Large 16" x 18"		80	26,875	19.82	11.09	36.23	8.06	75.20	300.0	0.25
Large round	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost				
4' x 6' bale		80	29,000	19.82	11.09	39.09	8.70	78.70	18.0	4.37
5' x 6' bale		100	37,500	24.42	14.10	50.55	11.25	100.31	16.0	6.27
Large square	Life = 10	Annual hours use = 300		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost				
1500 - 2000 lb bale		150	118,330	35.48	20.62	44.64	11.83	112.58	10.0	11.26
Bale wagons	Life = 12	Annual hours use = 150		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost				
SP 160 bale		150	147,250	103.00	35.28			138.28	400	0.35

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Cost of twine not included.

Forage Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre/hr)	Total Machine Cost ($/acre)
Swather (SP)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
Diesel with 20' header		100	79,715	107.45	29.75			137.20	8.5	16.14
Diesel with 30' header		100	87,375	117.78	34.29			152.06	12.75	11.93
Swather (pull-type)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
25' grain		80	18,450	19.82	11.09	24.87	5.54	61.31	8.9	6.88
30' grain		110	19,430	19.82	11.09	26.19	5.83	62.93	10.6	5.93
Disk mower	Life = 6	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
15' SP diesel		100	105,750	155.36	48.91			204.27	6.4	31.92
9'		80	27,330	19.82	11.09	40.15	8.20	79.26	3.8	20.76
12'		100	34,690	24.42	14.10	50.96	10.41	99.88	5.1	19.62
Mower conditioner	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
14' SP diesel		100	105,759	142.56	39.35			181.91	5.93	30.68
9' PTO		80	27,330	19.82	11.09	36.84	8.20	75.95	3.8	19.89
12' PTO		100	34,690	24.42	14.10	46.76	10.41	95.68	5.1	18.79
Rotary mowers	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
10' heavy duty		100	13,500	24.42	14.10	18.20	4.05	60.76	4.2	14.32
26' wing type		150	27,358	35.48	20.62	36.88	8.21	101.19	11.0	9.17
Rake	Life = 15	Annual hours use = 50		Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost			
9' parallel bar		40	10,170	8.53	5.40	23.02	6.10	43.06	3.8	11.28
10' rotary bar		40	11,170	8.53	5.40	25.29	6.70	45.93	3.8	12.03
Forage harvester	Life = 6	Annual hours use = 400		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost			
SP 350 HP		400	249,679	91.70	44.74			136.44	8.5	16.05
SP 450 HP		400	298,330	109.57	56.01			165.58	8.5	19.48
20" pulltype		150	43,375	35.48	20.62	15.93	3.25	75.29	6.8	11.09
26" pulltype		180	48,500	42.55	24.73	17.81	3.64	88.73	8.5	10.46
Dump wagon	Life = 15	Annual hours use = 200		Annual repair rate = 2% replacement cost			Salvage value = 10% replacement cost			
Small (700 cu ft)			17,450			9.88	1.75	11.60		
Medium (900 cu ft)			24,930			14.11	2.49	16.60		
Large (1200 cu ft) conveyor type			46,075			26.08	4.61	30.69		

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Baling Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (bale/hr)	Total Machine Cost ($/bale)
Balers (standard)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
Small 14" x 18"		60	21,875	11.34	7.49	29.49	6.56	54.88	200.0	0.27
Large 16" x 18"		80	26,875	19.82	11.09	36.23	8.06	75.20	300.0	0.25
Large round	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
4' x 6' bale		80	29,000	19.82	11.09	39.09	8.70	78.70	18.0	4.37
5' x 6' bale		100	37,500	24.42	14.10	50.55	11.25	100.31	16.0	6.27
Large square	Life = 10	Annual hours use = 300		Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
1500 - 2000 lb bale		150	118,330	35.48	20.62	44.64	11.83	112.58	10.0	11.26
Bale wagons	Life = 12	Annual hours use = 150		Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
SP 160 bale		150	147,250	103.00	35.28			138.28	400	0.35

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Cost of twine not included.

Years life = 7
Annual use (hrs) = 100, 200*, 300
Annual repair rate = 3% of replacement cost
Salvage value = 50% replacement cost

Combines

Combines (SP)	Annual Hours of Use (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost (Labor Omitted) ($/hr)	Total Machine Cost ($/hr)
SP diesel	100			325.01		377.77
50 inch cylinder	200	37	241,115	162.50	52.76	215.26
(HP = 175)	300			108.34		161.10
SP diesel	100			347.46		406.30
60 inch cylinder	200	45	257,770	173.73	58.85	232.58
(HP = 270)	300			115.82		174.67
Rotary type	100			357.77		410.59
(small)	200	29	265,420	178.88	52.82	231.70
(HP = 175)	300			119.26		172.08
Rotary type	100			384.16		445.75
(medium)	200	42	285,000	192.08	61.59	253.67
(HP = 250)	300			128.05		189.64
Rotary type	100			411.12		479.29
(large)	200	50	305,000	205.56	68.18	273.73
(HP = 300)	300			137.04		205.21

* This Annual Hours Used figure is typical.

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Grinders/Mixers and Dryers

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre/hr)	Total Machine Cost ($/acre)
Bale processor	Life = 12	Annual hours use = 80		Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost			
Bale shredder		80	15,670	19.82	11.09	25.03	5.88	[illegible]		
Tub grinder	Life = 12	Annual hours use = 80		Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost			
15 Tons/hour		100	32,000	24.42	14.10	51.11	12.00	[illegible]		
25 Tons/hour		120	39,500	29.60	16.82	63.09	14.81	[illegible]		
PTO feed mixer	Life = 12	Annual hours use = 80		Annual repair rate = 0% replacement cost			Salvage value = 10% replacement cost			
500 cubic feet		100	45,500	24.42	14.10	34.34	17.06	[illegible]		
900 cubic feet		150	58,000	35.48	20.62	43.77	21.75	[illegible]		

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Grain dryers		Annual hours use = 80		Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost		Moisture Drop $/Tonne 20-14%	Moisture Drop $/Tonne 17.5-14%
Continuous flow										
– small propane = 180 L/hr			64,500			95.92	76.03	[illegible]	17.20 (10 T/hr)	10.88 (15.8 T/hr)
– medium propane = 360 L/hr			75,600			112.42	151.66	[illegible]	13.20 (20 T/hr)	8.36 (31.6 T/hr)
– large propane = 540 L/hr			141,300			210.12	229.52	[illegible]	9.56 (46 T/hr)	6.33 (69.5 T/hr)

Natural gas drying costs are lower than propane.

Other variables such as relative humidity and air temperature can dramatically affect fuel consumption and throughput.

Years life = 7
Annual use (hrs) = 100, 200*, 300
Annual repair rate = 3% of replacement cost
Salvage value = 50% replacement cost

Combines

Combines (SP)	Annual Hours of Use (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost (Labor Omitted) ($/hr)	Total Machine Cost ($/hr)
SP diesel	100			325.01		377.77
50 inch cylinder	200	37	241,115	162.50	52.76	215.26
(HP = 175)	300			108.34		161.10
SP diesel	100			347.46		406.30
60 inch cylinder	200	45	257,770	173.73	58.85	232.58
(HP = 270)	300			115.82		174.67
Rotary type	100			357.77		410.59
(small)	200	29	265,420	178.88	52.82	231.70
(HP = 175)	300			119.26		172.08
Rotary type	100			384.16		445.75
(medium)	200	42	285,000	192.08	61.59	253.67
(HP = 250)	300			128.05		189.64
Rotary type	100			411.12		479.29
(large)	200	50	305,000	205.56	68.18	273.73
(HP = 300)	300			137.04		205.21

* This Annual Hours Used figure is typical.

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Grinders/Mixers and Dryers

Implement	Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre/hr)	Total Machine Cost ($/acre)
Bale processor	Life = 12	Annual hours use = 80	Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost			
Bale shredder	80	15,670	19.82	11.09	25.03	5.88	**61.81**		
Tub grinder	Life = 12	Annual hours use = 80	Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost			
15 Tons/hour	100	32,000	24.42	14.10	51.11	12.00	**101.62**		
25 Tons/hour	120	39,500	29.60	16.82	63.09	14.81	**124.31**		
PTO feed mixer	Life = 12	Annual hours use = 80	Annual repair rate = 0% replacement cost			Salvage value = 10% replacement cost			
500 cubic feet	100	45,500	24.42	14.10	34.34	17.06	**89.91**		
900 cubic feet	150	58,000	35.48	20.62	43.77	21.75	**121.62**		

400 *Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

Grain dryers	Life = 12	Annual hours use = 80	Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost		Moisture Drop $/Tonne 20-14%	Moisture Drop $/Tonne 17.5-14%
Continuous flow									
– small propane = 180 L/hr		64,500			95.92	76.03	**171.95**	17.20 (10 T/hr)	10.88 (15.8 T/hr)
– medium propane = 360 L/hr		75,600			112.42	151.66	**264.08**	13.20 (20 T/hr)	8.36 (31.6 T/hr)
– large propane = 540 L/hr		141,300			210.12	229.52	**439.64**	9.56 (46 T/hr)	6.33 (69.5 T/hr)

Natural gas drying costs are lower than propane.

Other variables such as relative humidity and air temperature can dramatically affect fuel consumption and throughput.

Years Life = 10
Annual use (hrs) = 300, 350*, 400
Annual repair rate = 2% of replacement cost
Salvage value = 50% replacement cost

Farm Trucks

Trucks	Annual Hours of Use (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost (Labor Omitted) ($/hr)	Total Machine Cost ($/hr)
	300			53.10		88.95
565 HP with 63" sleeper	350	62	140,750	45.52	35.85	81.37
	400			39.83		75.68

			Powered Unit		Implement		
Implement	Tractor H.P.	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost ($/hr)	Fixed Cost ($/hr)	Variable Cost ($/hr)	Total Machine Cost ($/hr)
Trailers	Life = 10	Annual hours use = 350	Annual repair rate = 2% replacement cost		Salvage value = 50% replacement cost		
Closed super B 28' 30'	565	62,930	45.52	35.85	59.84	5.39	146.60
Open super B 28' 30'	565	66,300	45.52	35.85	63.05	5.68	150.10
Tri-axle drop cattleliner 53'	565	74,025	45.52	35.85	70.39	6.35	158.10
Tri-axle drop flat deck 53'	565	36,505	45.52	35.85	34.71	3.13	119.21

* This Annual Hours Used figure is typical.

Rock Pickers and Grain Vacuums

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre/hr)	Total Machine Cost ($/acre)
Rock picker	Life = 10	Annual hours use= 150		Annual repair rate = 6% replacement cost				Salvage value = 50% replacement cost		
Rock picker reel type 5'		80	16,775	19.82	11.09	12.66	6.71	50.28	2.1	23.70
Rock rake 14'		80	15,060	19.82	11.09	11.36	6.02	48.30	2.1	22.77
Grain vacuums	Life = 15	Annual hours use = 150		Annual repair rate = 3% replacement cost				Salvage value = 10% replacement cost		
Small		100	15,200	24.42	14.10	11.47	3.04	53.02		
Large		120	18,450	29.60	16.82	13.92	3.69	64.03		

Irrigation Equipment

Implement		Tractor H.P.	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre)	Total Machine Cost ($/acre)
Centre pivot	Life = 20	Annual hours use = 1000		Annual repair rate = 1.5% replacement cost				Salvage value = 10% replacement cost		
1/4 section pivot & electric pump & main line			80,875	8.02	1.21			9.23	133	69.40
1/4 section pivot w/ corner attachment & electric pump & main line			109,625	10.87	1.64			12.51	147	85.10

NOTE: Irrigation equipment variable cost includes annual maintenance only.

Years Life = 10
Annual use (hrs) = 300, 350*, 400
Annual repair rate = 2% of replacement cost
Salvage value = 50% replacement cost

Farm Trucks

Trucks	Annual Hours of Use (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost (Labor Omitted) ($/hr)	Total Machine Cost ($/hr)
	300			53.10		88.95
565 HP with 63" sleeper	350	62	140,750	45.52	35.85	81.37
	400			39.83		75.68

				Powered Unit		Implement		
Implement	Tractor H.P.	Current Replacement Cost ($)	Fixed Cost ($/hr)	Variable Cost ($/hr)	Fixed Cost ($/hr)	Variable Cost ($/hr)	Total Machine Cost ($/hr)
Trailers	Life = 10	Annual hours use = 350	Annual repair rate = 2% replacement cost		Salvage value = 50% replacement cost		
Closed super B 28' 30'	565	62,930	45.52	35.85	59.84	5.39	146.60
Open super B 28' 30'	565	66,300	45.52	35.85	63.05	5.68	150.10
Tri-axle drop cattleliner 53'	565	74,025	45.52	35.85	70.39	6.35	158.10
Tri-axle drop flat deck 53	565	36,505	45.52	35.85	34.71	3.13	119.21

* This Annual Hours Used figure is typical

Rock Pickers and Grain Vacuums

Implement	Tractor H.P	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre/hr)	Total Machine Cost ($/acre)
Rock picker	Life = 10	Annual hours use = 150	Annual repair rate = 6% replacement cost			Salvage value = 50% replacement cost			
Rock picker reel type 5'	80	16,775	19.82	11.09	12.66	6.71	50.28	2.1	23.70
Rock rake 14'	80	15,060	19.82	11.09	11.36	6.02	48.30	2.1	22.77
Grain vacuums	Life = 15	Annual hours use = 150	Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost			
Small	100	15,200	24.42	14.10	11.47	3.04	53.02		
Large	120	18,450	29.60	16.82	13.92	3.69	64.03		

Irrigation Equipment

Implement	Tractor H.P	Current Replacement Cost ($)	Powered Unit Fixed Cost ($/hr)	Powered Unit Variable Cost ($/hr)	Implement Fixed Cost ($/hr)	Implement Variable Cost ($/hr)	Total Machine Cost ($/hr)	Total Machine Cost (acre)	Total Machine Cost ($/acre)
Centre pivot	Life = 20	Annual hours use = 1000	Annual repair rate = 1.5% replacement cost			Salvage value = 10% replacement cost			
1/4 section pivot & electric pump & main line		80,875	8.02	1.21			9.23	133	69.40
1/4 section pivot w corner attachment & electric pump & main line		109,625	10.87	1.64			12.51	147	85.10

NOTE: Irrigation equipment variable cost includes annual maintenance only.

Calculating Farm Machinery Costs

Preface

The worksheets and tables on the following pages can be used to calculate the costs of operating your own machines. An explanation of the variables is provided on the following page. A sample calculation is done for you on pages 32 through 34, and blank worksheets are provided on pages 35 through 37. Standards for fuel consumption, depreciation, annual use, repair rates and field efficiency are given in the tables on pages 38 and 39. **During 1999, we developed an online machinery cost calculator that brings the worksheet on page 33 to life. This calculator is available free of charge to you at www1.agric.gov.ab.ca/app24/costcalculators/machinery/getmachimpls.jsp**

Online cost calculator instructions

To use the calculator:

Page 1 has 3 list boxes:

1. Power units and self propelled – click on it and scroll down until you find the machine you want and highlight it (e.g. 300 hp tractor)
2. Implement 1 – if you selected a tractor in the first window, now select the implement you want to pull (e.g. 40 ft air seeder).
3. Implement 2 – if you are pulling two implements click on this and select the second implement (e.g. harrow packer). If you aren't pulling two implements in tandem, ignore the second implement.
4. After selecting the machine(s) you want, click on the **proceed to calculator** button, and page 2 will appear.

Page 2 has the cost information for the specific machine you chose from the database. All these numbers are soft, so you can override one or all of them and enter your own numbers. To do this, just click on the number you want to change and type in the new number. When you have all the input data modified to your satisfaction, click on **calculate costs.**

Page 3 – the top (Input Parameters) is a summary of your input data. The bottom is the calculated cost result. If you want to change any of the inputs, click on the back button, which will take you back to the second page.

If you have any problems using the calculator, please contact Brad Smith at (403) 653-5136 or e-mail bradley.smith@gov.ab.ca

If you need further assistance in using this material, contact an Alberta Agriculture, Food and Rural Development Risk Management Specialist at one of the following locations.

Office	Phone
Alberta Ag-Info Centre	1-866-882-7677
Airdrie	(403) 948-8524
Cardston	(403) 653-5136
Red Deer	(403) 340-7007
Vegreville	(780) 632-5417
Wetaskiwin	(780) 361-1241

To contact a Risk Management Specialist outside your local calling area, use the RITE system for toll-free long distance service. Just dial 310-0000 and then enter the seven digit number of the office you want, or stay on the line to get operator assistance.

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Preface

The worksheets and tables on the following pages can be used to calculate the costs of operating your own machines. An explanation of the variables is provided on the following page. A sample calculation is done for you on pages 32 through 34, and blank worksheets are provided on pages 35 through 37. Standards for fuel consumption, depreciation, annual use, repair rates and field efficiency are given in the tables on pages 38 and 39. **During 1999, we developed an online machinery cost calculator that brings the worksheet on page 33 to life. This calculator is available free of charge to you at www1.agric.gov.ab.ca/app24/costcalculators/machinery/getmachimpls.jsp**

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2. Implement 1 – if you selected a tractor in the first window: now select the implement you want to pull (e.g. 40 ft air seeder).
3. Implement 2 – if you are pulling two implements, click on this and select the second implement (e.g. harrow packer). If you aren't pulling two implements in tandem, ignore the second implement.
4. After selecting the machine(s) you want, click on the **proceed to calculator** button, and page 2 will appear.

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Page 3 – the top (Input Parameters) is a summary of your input data. The bottom is the calculated cost result. If you want to change any of the inputs, click on the back button, which will take you back to the second page.

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Machinery Cost Terms

Record all the information needed to calculate ownership and operating costs on page 33. Items **N** through **Q** will require use of the formulas on page 32.

Term	Line	Information Required
Machine description		The machine's make and model.
Data and Assumptions		
Today's new price	**A**	The suggested retail price of the desired machine (new or used).
Planning period	**B**	The number of years the machine will be owned.
Today's used price	**C**	The price of a used machine that is similar to the new, desired machine and as old as the planning period.
Annual hours of use	**D**	Total annual use for all operations.
Fuel usage	**E**	Litres or gallons per hour.
Fuel cost	**F**	$ per gallon or litre
Labour cost	**G**	$ per hour
Annual repair rate	**H**	Percentage of new price [refer to table on page 39].
Risk-free interest rate	**I**	The Bank of Canada 90 day T-Bill rate or equivalent.
Risk premium	**J**	A value estimate that represents the additional risk of the investment over and above the 90 day T-bill rate. [6% is commonly used]
Marginal tax rate	**K**	The expected marginal tax rate of the farm business during the planning period.
Rate of inflation	**L**	The current rate of inflation, e.g. the consumer price index.
Capital cost allowance class rate	**M**	The appropriate tax percentage depreciation rate for the machine. Generally: 30% for tractors, trucks and self-propelled machines: 20% for pull-type equipment.
Formulas		
Real discount rate	**N**	Interest rate adjusted for expected risk and inflation. [calculated on page 32]
Real discount factor	**O**	Value used to arrive at the present value (dollar amount) of the future salvage value of the machine. [calculated on page 32]
Capital cost allowance (CCA) adjustment factor	**P**	Value used to arrive at the after tax capital outlay as well as adjustment for the after tax salvage value. [calculated on page 32]
Capital recovery factor	**Q**	Value that recovers that capital value of the machine through time with the specified real return. [calculated on page 32]

Using the Data and Assumptions [items A through M] and the Formula Results [items N through Q], calculate the ownership and operating costs for the machine combination. The summary sheet on page 34 can be used to list and total costs for all field operations and to calculate per acre (bale, bushel, etc.) values.

Worksheet Formulas

N Real Discount Rate

$$= \left[\left(\frac{(1 + I + J)}{1 + L}\right) - 1\right] \times (1 - K) = \left[\left(\frac{(1 + \underline{.0277} + \underline{.06})}{1 + \underline{.02}}\right) - 1\right] \times (1 - \underline{0})$$

I = Interest rate
J = Risk premium
K = Marginal tax rate
L = Rate of inflation

$= \underline{0.664}$

O Real Discount Factor – power unit or self-propelled machine

$$= \frac{1}{(1 + N)^B}$$

$$= \frac{1}{(1 + \underline{.0664})^{\underline{10}}} = \underline{.5259}$$

Implement 1

$$= \frac{1}{(1 + \underline{.0664})^{\underline{7}}} = \underline{.6377}$$

Implement 2

B = Planning period
N = Real discount rate

$$= \frac{1}{(1 + \underline{\quad})^{\underline{\quad}}} = \underline{\quad}$$

P CCA Adjustment Factor – power unit or self-propelled machine

$$= 1 - \left(\frac{M \times K}{M + N}\right)$$

$$= 1 - \left(\frac{\underline{.30} \times \underline{0}}{\underline{.30} + \underline{.0664}}\right) = \underline{1}$$

Implement 1

$$= 1 - \left(\frac{\underline{.20} \times \underline{0}}{\underline{.20} + \underline{.0664}}\right) = \underline{1}$$

Implement 2

K = Marginal tax rate
M = CCA class rate
N = Real discount rate

$$= 1 - \left(\frac{\underline{\quad} \times \underline{\quad}}{\underline{\quad} + \underline{\quad}}\right) = \underline{\quad}$$

Q Capital Recovery Factor

$$= \frac{N}{(1 - O)}$$

$$= \frac{\underline{.0664}}{(1 - \underline{.5259})} = \underline{.1400}$$

Implement 1

$$= \frac{\underline{.0664}}{(1 - \underline{.6377})} = \underline{.1832}$$

Implement 2

N = Real discount rate
O = Real discount factor

$$= \frac{\underline{\quad}}{(1 - \underline{\quad})} = \underline{\quad}$$

Machinery Cost Worksheet

Field Operation		Power Unit or Self-Propelled Unit	Implement 1	Implement 2	Total
Machine Descriptons:		*Tractor FWA 100 HP*	*Round Baler 5' x 6'*		
Data & Assumptions					
A New price		$ *86,290*	$ *37,500*	$	
B Planning period (years)		*10* yrs	*7* yrs	yrs	
C Used price		$ *43,145*	$ *18,750*	$	
D Annual hours of use (total use all operations)		*400* hrs	*100* hrs	hrs	
E Fuel usage (litres per hour)		*17* l/hr			
F Fuel cost ($ per litre)		$ *0.39*			
G Labour cost ($ per hour)		$ *15*			
H Annual repair rate (% of new price)		*3* %	*3* %	%	
I Interest rate (risk free)		*2.77* %			
J Risk premium		*6* %			
K Marginal tax rate		*0* %			
L Rate of inflation		*2* %			
M CCA class rate		*30* %	*20* %	%	
Formula Results					
N Real discount rate		*.0664*			
O Real discount factor		*.5259*	*.6377*		
P CCA adjustment factor		*1*	*1*		
Q Capital recovery factor		*.1400*	*.1832*		
Ownership Costs					
1. Capital recovery ($ per year) = [(Line A x Line P) – (Line C x Line P x Line O)] x Line Q		$ *8,904.01*	$ *4,679.50*	$	
2. Insurance and housing ($ per year)	= Line A x 1%	$ *862.90*	$ *375.00*	$	
3. Total annual ownership costs	= Line 1 + Line 2	$ *9,766.91*	$ *5,054.50*	$	
4. Total ownership costs per hour	= Line 3 ÷ Line D	$ *24.42*	$ *50.55*	$	$ *74.97*
Operating Costs					
5. Fuel cost	= Line E x Line F x Line D x (1 – Line K)	$ *2,652.00*			
6. Lubrication	= Line 5 x 15%	$ *397.80*			
7. Repairs	= Line A x Line H	$ *2,588.70*	$ *1,125.00*	$	
8. Labor	= Line D x Line G	$ *6,000.00*			
9. Total annual operating costs = Line 5 + Line 6 + Line 7 + Line 8		$ *11,638.50*	$ *1,125.00*	$	
10. Total annual operating costs per hour	= Line 9 ÷ Line D	$ *29.10*	$ *11.25*	$	$ *40.35*
Total Cost					
1. Total annual costs	= Line 3 + Line 9	$ *21,405.41*	$ *6,179.50*	$	
2. Total cost per hour	= Line 4 + Line 10	$ *53.51*	$ *61.80*	$	$ *115.31*

See online Machinery Cost Calculator at www1.agric.gov.ab.ca/app24/costcalculators/machinery/getmachimpls.jsp

Machinery Cost Summary

Machine	Annual Hours	Working Width (ft)	Working Speed (mph)	Field Efficiency	Acres per Hour	$ per Hour	$ per Hour (power unit & implement)	$ per Acre
Tractor 4WD 350 HP	400	—	—	—	—	58.01	—	6.46
Air Seeder w/cult 50'	150	50	5	60%	18.18	25.53	83.53	8.28
Tractor FWA 180 HP	400	—	—	—	—	39.73	—	3.87
Heavy Harrow 60'	40	50	5	70%	21.21	36.49	76.22	4.96
Tractor FWA 100 HP	400	—	—	—	—	29.09	—	9.62
Round Baler 5' x 6'	100	14	5	65%	5.56	11.25	40.34	11.11
Swather Diesel 30'	100	30	7	70%	17.89	49.28	—	9.33
Rotary Combine 300 HP	200	30	5	70%	12.78	83.17	—	22.59

Machinery Cost Summary

Machine	Annual Hours	Working Width (ft)	Working Speed (mph)	Field Efficiency	Acres per Hour	$ per Hour	$ per Hour (power unit & implement)	$ per Acre
Tractor 4WD 350 HP	*400*	—	—	—	—	*58.01*	—	*6.46*
Air Seeder w/cult 50'	*150*	*50*	*5*	*60%*	*18.18*	*25.53*	*83.53*	*8.28*
Tractor FWA 180 HP	*400*	—	—	—	—	*39.73*	—	*3.87*
Heavy Harrow 60'	*40*	*50*	*5*	*70%*	*21.21*	*36.49*	*76.22*	*4.96*
Tractor FWA 100 HP	*400*	—	—	—	—	*29.09*	—	*9.62*
Round Baler 5' x 6'	*100*	*14*	*5*	*65%*	*5.56*	*11.25*	*40.34*	*11.11*
Swather Diesel 30'	*100*	*30*	*7*	*70%*	*17.89*	*49.28*	—	*9.33*
Rotary Combine 300 HP	*200*	*30*	*5*	*70%*	*12.78*	*83.17*	—	*22.59*

Worksheet Formulas

N Real Discount Rate

$$= \left[\left(\frac{(1 + I + J)}{1 + L}\right) - 1\right] \times (1 - K) = \left[\left(\frac{(1 + ____ + ____)}{1 + ____}\right) - 1\right] \times (1 - ____)$$

I = Interest rate
J = Risk premium
K = Marginal tax rate
L = Rate of inflation

= _____

O Real Discount Factor – power unit or self-propelled machine

$$= \frac{1}{(1 + N)^B}$$

$$= \frac{1}{(1 + ____)^__} = ____$$

Implement 1

$$= \frac{1}{(1 + ____)^__} = ____$$

Implement 2

$$= \frac{1}{(1 + ____)^__} = ____$$

B = Planning period
N = Real discount rate

P CCA Adjustment Factor – power unit or self-propelled machine

$$= 1 - \left(\frac{M \times K}{M + N}\right)$$

$$= 1 - \left(\frac{____ \times ____}{____ + ____}\right) = ____$$

Implement 1

$$= 1 - \left(\frac{____ \times ____}{____ + ____}\right) = ____$$

Implement 2

$$= 1 - \left(\frac{____ \times ____}{____ + ____}\right) = ____$$

K = Marginal tax rate
M = CCA class rate
N = Real discount rate

Q Capital Recovery Factor

$$= \frac{N}{(1 - O)}$$

$$= \frac{____}{(1 - ____)} = ____$$

Implement 1

$$= \frac{____}{(1 - ____)} = ____$$

Implement 2

$$= \frac{____}{(1 - ____)} = ____$$

N = Real discount rate
O = Real discount factor

Machinery Cost Worksheet

Field Operation		Power Unit or Self-Propelled Unit	Implement 1	Implement 2	Total
Machine Descriptons:					
Data & Assumptions					
A New price		$	$	$	
B Planning period (years)		yrs	yrs	yrs	
C Used price		$	$	$	
D Annual hours of use (total use all operations)		hrs	hrs	hrs	
E Fuel usage (litres per hour)		l/hr			
F Fuel cost ($ per litre)		$			
G Labour cost ($ per hour)		$			
H Annual repair rate (% of new price)		%	%	%	
I Interest rate (risk free)		%			
J Risk premium		%			
K Marginal tax rate		%			
L Rate of inflation		%			
M CCA class rate		%	%	%	
Formula Results					
N Real discount rate					
O Real discount factor					
P CCA adjustment factor					
Q Capital recovery factor					
Ownership Costs					
1. Capital recovery ($ per year) = [(Line A x Line P) – (Line C x Line P x Line O)] x Line Q		$	$	$	
2. Insurance and housing ($ per year)	= Line A x 1%	$	$	$	
3. Total annual ownership costs	= Line 1 + Line 2	$	$	$	
4. Total ownership costs per hour	= Line 3 ÷ Line D	$	$	$	$
Operating Costs					
5. Fuel cost	= Line E x Line F x Line D x (1 – Line K)	$			
6. Lubrication	= Line 5 x 15%	$			
7. Repairs	= Line A x Line H	$	$	$	
8. Labor	= Line D x Line G	$			
9. Total annual operating costs = Line 5 + Line 6 + Line 7 + Line 8		$	$	$	
10. Total annual operating costs per hour	= Line 9 ÷ Line D	$	$	$	$
Total Cost					
1. Total annual costs	= Line 3 + Line 9	$	$	$	
2. Total cost per hour	= Line 4 + Line 10	$	$	$	$

See online Machinery Cost Calculator at www1.agric.gov.ab.ca/app24/costcalculators/machinery/getmachimpls.jsp

Machinery Cost Summary

Machine	Annual Hours	Working Width (ft)	Working Speed (mph)	Field Efficiency	Acres per Hour	$ per Hour	$ per Hour (power unit & implement)	$ per Acre

Machinery Cost Summary

Machine	Annual Hours	Working Width (ft)	Working Speed (mph)	Field Efficiency	Acres per Hour	$ per Hour	$ per Hour (power unit & implement)	$ per Acre

Fuel Consumption for Varying Tractor Horsepower[1]

Tractor Type and Size	Average Drawbar Horsepower[2]		Average Fuel Consumption[3] (Litres per hour)	
	Diesel Tractors	Gasoline Tractors	Diesel Tractors	Gasoline Tractors
Two-wheel drive PTO HP				
30 - 39	—	31.5	—	
40 - 49	—	38.3	—	
50 - 59	48.2	47.1	10.5	
60 - 69	56.2	55.2	13.6	
70 - 79	65.5	64.5	16.4	
80 - 89	73.5	74.5	17.7	
90 - 99	84.0	82.0	20.5	
100 - 119	90.3	—	22.7	—
120 - 139	111.6	—	28.2	—
140 - 159	128.9	—	32.3	—
160 - 179	145.8	—	38.6	—
Over 180	148.9	—	39.1	—
Four-wheel drive DBHP				
100 - 149	135.0	—	33.2	—
150 - 174	159.4	—	40.3	—
175 - 199	182.8	—	50.0	—
200 - 224	217.4	—	53.0	—
225 - 249	235.5	—	58.0	—
250 - 274	265.0	—	61.4	—
275 - 299	281.3	—	62.6	—
300 - 349	305.0	—	66.4	—

This data on fuel consumption for different sizes of tractors was calculated from the Nebraska Tractor Tests Reports. The fuel consumption figures are based on "75% of Pull at Maximum Power." These fuel consumption figures are for tractors under normal load in average field conditions. Fuel use per hour will be affected by:

- load factor (75% is assumed in these estimates)
- engine RPM
- gear
- correct engine tuning

While these figures may be a good indication of fuel use per hour for a machine, fuel consumption per acre will be affected by the Field Efficiency related to each operation. Estimation of total fuel consumption should take this factor into account. Some factors that can significantly affect field efficiency include:

- wheel slippage
- tire pressure
- tractor ballast
- depth of and sharpness of implement
- soil type and condition
- amount of turning required
- implement overlap in each pass
- downtime to refill seed and fertilizer boxes

[1] This data was summarized from "Nebraska Tractor Test Summary 1972 through 1981," *The Grain Grower*, Page 762 (UGG), April 1982 and from 1980 - 1981 Agricultural Yearbook, S.S.A.E, May, 1980, pp 537 - 545.

[2] Average drawbar horsepower for all tractors in each range.

[3] Average fuel consumption for all tractors in each range.

Machinery Costs Assumption Guide

Machine	Depreciation Lifetime[1]	Annual Use[2]	Annual Repair Rate[3]	Field Efficiency[4]	Salvage Value
	(years)	(hours)	% orig. cost		% orig. cost
Tractors	10	400	3%	—	50%
Combines	7	150	3%	60 - 80%	50%
Cultivators	15	250	3 - 8%	70 - 90%	10%
Discers	15	150	3%	70 - 90%	10%
Seed drills	6	100	2%	65 - 80%	50%
Harrows, packers	15	40	2%	70 - 90%	10%
Sprayers	15	50	2%	50 - 80%	10%
Stone pickers	15	40	2%	50 - 90%	50%
Swathers	7	100	3%	70 - 85%	50%
Rakes	15	50	2%	60 - 90%	10%
Mower-conditioner	6	50	2%	60 - 85%	50%
Forage harvester	6	80	3%	50 - 80%	50%
Standard balers	7	80	3%	50 - 85%	50%
Large round balers	7	60	2%	60 - 85%	50%
Grain dryers	12	200	3%	—	10%
Loaders	15	40	2%	—	10%
Air drills	6	100	2%	65 - 80%	50%

1. Estimated average number of years until a machine depreciates to the salvage value.
2. Estimated average annual farm use.
3. Estimates are based on average conditions and the indicated annual hours of use. Repair rates may be higher for older machines, more hours of annual use or more difficult working conditions.
4. Field efficiency is a percentage estimate of the amount of time machinery is actually in use relative to the total time required to complete an operation (refer also to page 38).

Acres per hour

Acres per hour or "effective field capacity" can be calculated using the following formula:

Acres per hour (effective field capacity)

$$= \frac{\text{machine width (ft)} \times \text{speed (mph)} \times \text{field efficiency}}{8.25}$$

e.g. A 31 foot cultivator travelling at 5 mph operating at 80% field efficiency would have an effective field capacity of:

Acres per hour

$$= \frac{31 \times 5 \times .80}{8.25} = 15 \text{ ac/hr}$$

Power required for tillage

Machine	H.P. per Foot Width H.P. Drawbar		H.P. P.T.O.	
	2"	5"	Light	Heavy
	(5 mph)		(6.2 mph)	
Chisel plow	1.5	3.4	5.0	6.0
Field cult.	.7	1.8 (4")	3.4	5.0
Tandem disc	1.6	5.0	5.1	7.5
Blade cult.	2.6	4.5	4.8 (5 mph)	

Also available from Alberta Agriculture, Food and Rural Development

Weeds Identification Program – CD-ROM

Having a problem identifying those weeds in your crop or garden? This **CD-ROM**-based program will make the identification process quick and easy. Just select the features of the plant at whatever growth stage it is at, and the program will provide you with a short list of weeds to choose from. Then, it's a simple matter of matching the picture with the weed in question. Identifying the weed will help you figure out how to best get rid of it.

CD-ROM **$10.00**

Insect I.D. Program – Cereal and Oilseed Crops CD-ROM

This easy-to-use **CD-ROM** helps identify the major insect pests of cereal and oilseed crops in Western Canada. It was designed for both the farmer who wants to improve insect identification management and the agronomist who provides scouting services, but isn't a professional entomologist.

The system identifies insect pests based on the answers to four questions:

- What is your crop?
- What stage of growth is it at?
- What color is the insect pest?
- What type of damage do you see?

Your answers are analysed, and the system provides identification information including photographs, video and text. It also features information on biology, distribution, scouting and economic thresholds.

CD-ROM **$30.00**

Weed Seedling Guide

Early identification of grass and broad-leaved weeds saves time and money! This booklet helps farmers and others identify weed seedlings. This book has over 60 coil-bound pages of information on 40 broad-leaved weeds and 10 grasses, a table of contents organized by cotyledon (seed-leaf) shape to make identification easier, 49 drawings of cotyledon (seed-leaf) shapes, 50 large full-color photos of weed seedlings and a glossary of terms. 65 pages.

#640-9 **$8.00**

How Herbicides Work

How Herbicides Work is targeted at professionals who work with herbicides. The book may also prove valuable to producers who have an interest in the technical aspects of herbicides. 134 pages.

This book provides a comprehensive look at:

- how herbicides enter and move in the plant
- how herbicides break down in the plant and soil
- how plants develop resistance to herbicides

#606-2 **$35.00**

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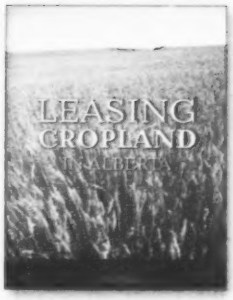
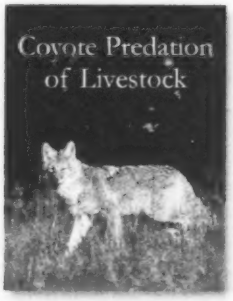


Leasing Cropland in Alberta

Whether you are a landlord with cropland to lease or a farmer looking to expand your operation without the large capital investment associated with purchasing land, *Leasing Cropland in Alberta* is worth reading. This book looks at many aspects of leasing and can be used as a guide for setting up a lease that is suitable for both the landlord and the tenant. 51 pages.

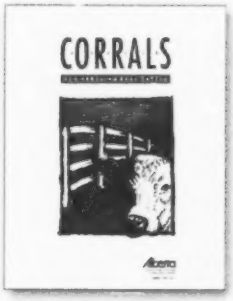
#812-5 **$8.00**



Coyote Predation of Livestock

Coyotes cause over 75 per cent of the predation losses of livestock in Alberta. This book helps livestock producers prevent or reduce losses from coyotes and other predators. It shows you how to determine the cause of death. You'll also learn how to interpret the signs at the scene of the attack, so you can identify the predator species. It gives you detailed information on how to prevent or reduce coyote predation with fencing, good herd management, guardian animals, frightening devices and various lethal control methods. 31 pages.

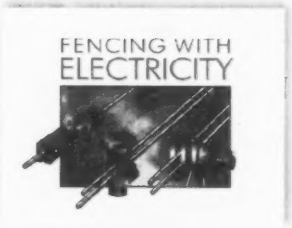
#684-19 **$8.00**



Corrals for Handling Beef Cattle

This best-selling book features information on cattle behavior, handling techniques, corral design, corral geometry and corral components. It's packed with over 60 designs and corral plans. It has been reviewed by industry experts including Temple Grandin, the internationally recognized expert on cattle behavior from Colorado State University. Everyone interested in handling cattle should have this comprehensive guide. 91 pages.

#420/723-1 **$10.00**



Fencing with Electricity

This fully illustrated new book will help you choose and build the right electric fence for your operation. It looks at planning an electric fence, fence components, electrifying existing fence, and fence safety and maintenance. It also provides electric fence troubleshooting tips. Six different types of electric fences are discussed in detail and comprehensive diagrams make the information easy to understand. 47 pages.

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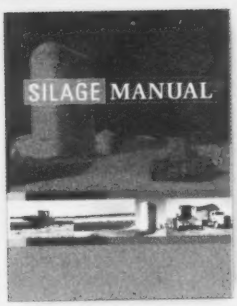
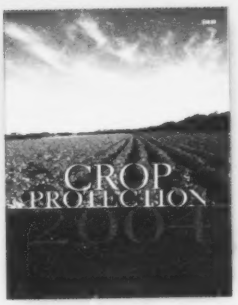


Silage Manual

Alberta Agriculture, Food and Rural Development's *Silage Manual* shows how silage systems can help producers develop nutritious, cost-effective feed supplies. Examining all aspects of silage making helps producers balance costs against benefits and weigh advantages against disadvantages. The *Silage Manual* contains information about the ensiling process, crops for silage, silage additives, harvesting, silos, silage quality, feeding value and costs of production. 86 pages.

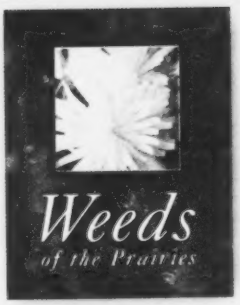
Agdex #120/52-2 $15.00



Crop Protection 2004

The "Blue Book" features the most comprehensive and up-to-date information on the selection and application of chemicals to protect your crops. This 512-page book includes information on products, tank mixes and formulation changes. Easy-to-use charts allow users to find information quickly. The book has a complete guide to safety, including protective clothing, first aid, emergency help and proper container disposal.

Agdex #606-1 $10.00



Weeds of the Prairies

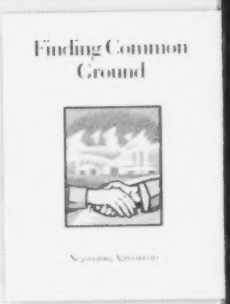
Look to the *Weeds of the Prairies* book for a practical way to identify the weeds in your crop or garden. This second edition is a comprehensive field guide to the common weeds across the Canadian Prairie provinces. The book gives you full-colour photos of 112 weeds at different growth stages. Weeds are colour-coded by flower colour for easy reference, and the full index lets you find the species you want by common, scientific or family name. 266 pages.

Agdex #640-4 $20.00

Pulse Crops in Alberta

This is a "must have" book for anyone interested in growing pulse crops. Learn the basics of pulse production or get more specific information in the colour pages on field pea, dry bean, lentil and fababean. This book also contains information about some lesser known pulses: chickpea, fenugreek, grasspea, lupin and soybean. 150 pages.

Agdex #142/20-1 $25.00



Finding Common Ground...Negotiating Agreements

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